

FLIGHT

The
**AIRCRAFT
ENGINEER
AND
AIRSHIPS**

First Aero Weekly in the World.

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport

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EDITORIAL COMMENT



ANOTHER milestone in the story of the air was marked on Sunday last by the arrival of the British airship R 34 at Long Island, after the successful crossing of the Atlantic. Thus, in less than a month, two brilliant records have been placed to the credit of the Empire by the first direct crossing by aeroplane, and now by the journey of R 34, which has completed the first Atlantic voyage achieved by a lighter-than-air vessel.

The great airship had nothing in the way of a "joy-trip." At the latter end of the voyage she encountered a succession of electric storms, which her navigators had to endeavour to avoid, thereby increasing the distance and running their fuel supplies perilously near to exhaustion. How nearly is to be judged by the fact that when she

arrived at her destination at Mineola she had but forty minutes' fuel left. At one stage of the voyage she encountered a fitty-knot westerly gale, and for some time made no progress at all. Still, all's well that ends well, and the principal thing is that she safely accomplished the journey and duly arrived at her determined port of destination.

It may be quite natural that a number of the newspapers, here and in America, have tended to hysteria, and have indulged in all sorts of superlatives in connection with R 34's successful voyage. Therein they are wrong, though it is probably the case that the very same happened a hundred years ago, when the first steamship crossed the Atlantic. If the matter is viewed in its true perspective, we shall realise that the successful crossing of the intervening ocean, and the resultant record of the first airship voyage from Britain to America, is in all respects comparable to that of the first steamship, and is not at all in the same category as the flight accomplished by Alcock and Brown last month. The latter demonstrated that it is possible, given a certain amount of luck, to safely pilot an aeroplane across nearly two thousand miles of sea. It has, however, not much immediate commercial value. It is rather the consummation of a very fine sporting effort. The voyage of R 34 is something rather different. Here we have the case of a great airship setting out from her base at an exactly determined time, just as a ship sets sail from her home port. All being well, she was due at her destination at a particular time, but, through stress of weather, she was subjected to a delay which added materially to the time of the voyage, and ran her fuel supplies too close to be pleasant. Nevertheless, she did arrive, after battling with weather conditions that would have wrecked the airship of ten years ago. Ships and steamers are subject to the same delays through adverse conditions of weather, and the records are full of cases of steamers having to burn cargo and wooden fittings because of such delays depleting their bunkers. All these things being as they are, we prefer to regard the voyage of R 34 as being merely the first example of something that will become commonplace in the not very far distant future. It has simply demonstrated what everyone who has studied the development of the airship believed to be possible. Lessons have been

learnt that will be of the greatest value in the planning of aerial services—notably that fuel endurance must be increased if the factor of safety is to be satisfactorily high. But we know as an ascertained fact now what was simply a matter of belief before—that the Atlantic crossing can be accomplished even in face of really adverse conditions. Not for a moment do we desire to withhold any of the credit due to General Maitland, Major Scott, and their gallant companions. They were the pioneers of Atlantic flight by airship, and history will always regard them as such. They sailed away into unknown conditions, and, in the words of Major Scott's own wireless message, they "stuck it" when conditions seemed to be all against a successful termination of their journey. It would have been easy for a less determined commander with a less efficient crew to have given up and turned back to Newfoundland in search of the safety that, at one time, did not seem to lie in the prosecution of their enterprise. They succeeded by sheer pluck and that British quality of not knowing when they were beaten. All honour and credit to them for it.

♦ ♦ ♦

Aerial Navigation Schools

General Seely stated in the House a week or two ago that the whole system of instruction in aerial navigation is being revised, and that the schools of instruction are being rapidly reorganised. It is to be hoped that the reorganisation will in fact be rapid, and that some early statement may be forthcoming as to the intentions of the Air Ministry regarding the facilities, if any, which are to be extended to civilian pilots and navigators. The matter is one of vital importance to the future of civilian flying, but it is one that may easily be lost sight of in face of other sides of development. It is only now, when we are beginning to talk of plans for more and more long-distance services, that we are able to realise the enormous importance of a thorough system of training in navigation. During the War, navigation in its proper sense played a very small part in aviation. Distances traversed were relatively short, and navigation was by the comparatively simple methods of maps and landmarks. If, however, aerial services are to be established and maintained between points separated by wide expanses of ocean, it is perfectly obvious that something more than the mere ability to read maps and pick up indicated landmarks will be essential. As a matter of fact, the real art of aerial navigation has received very little attention up to now. Before the War, the civilian pilot had no knowledge, and had received no training at all. The R.F.C. were in very little better case, and the R.N.A.S. alone, owing to the number of naval officers who transferred to the flying branch, had any practical knowledge of the science. The position at the time the R.A.F. was formed by the fusion of the two services was, then, that a proportion of R.N.A.S. officers had received a thorough training in navigation, while a very much larger number had done "courses" at Portsmouth and other centres of instruction. The officers of the R.F.C. generally knew nothing more than courses of aerial map reading had taught them. At once the Air Council decided to institute schools of navigation, though the resultant courses had not, at the time the Armistice was signed, gone very far. In fact, it is not too much to say that the majority of officers of the R.A.F. were still profoundly ignorant of the more scientific side of aerial navigation. There

was no help for it. All the energies of the instructional staff of the R.A.F. had to be devoted to the training of fighting pilots and observers to make good the wastage of war and to build up our aerial arm to a position of supremacy over that of the enemy. Now that we are able to turn our thought to the developments of peace flying, the need for a better system of navigational training has become apparent, and the Air Council is giving attention to it.

The main trouble to be grappled with is the dearth of competent instructors. The best method of procedure would seem to be to obtain officers from the Navy who are qualified in navigation, and to train them as instructors, additionally, of course, to those who are now serving, or have served, in the R.A.F., and who are possessed of similar qualifications. If the Navy cannot spare enough qualified officers from their sea duties, we suggest that it might be possible to make up the numbers from among officers of the R.N.R. who have been demobilised from the Navy, and who, by reason of the depletion of the Mercantile Marine by enemy action, are without immediate prospects of employment. However the difficulty is to be surmounted, it is clear that the matter is one of urgency, and that no time should be lost in grappling with it.

♦ ♦ ♦

A Territorial Air Force

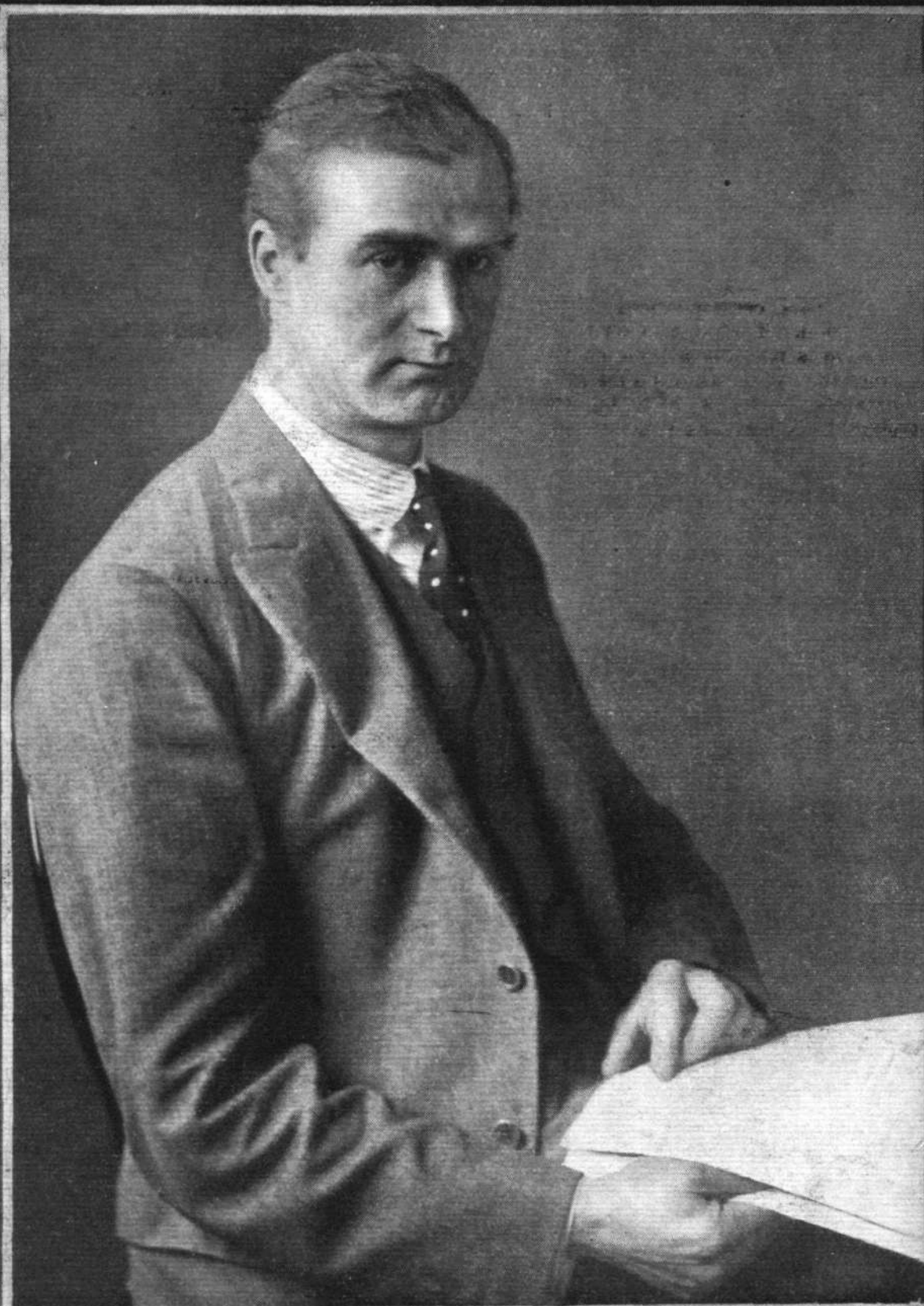
A correspondent of *The Times* suggests that the Government should take in hand the formation of an Air Force Reserve, presumably to more or less supplant the Regular service. He does not make this a point, but if his suggestions were carried out in their entirety that would be the effect, inasmuch as they would render quite superfluous the maintenance of any Regular force at all. That does not detract from the basic merits of the conception, but it is as well to point out the weakness and to lay down at once that it is quite essential that there should always exist at least a small active force for immediate needs in case of war. We cannot do better than quote the suggestion in its entirety. He says:

"My suggestion is that a reserve of the R.A.F. be formed, with aerodromes adjacent to convenient large towns. Individuals accepted for service in the reserve to attend the aerodrome every week and put in a minimum of three hours' flying and three hours' ground instruction. Two weeks a year to be devoted to annual training. Such a scheme would appeal to every athlete and adventure-lover in the country. To be taught to fly, provided with a machine, and allowed to "aviate" for three hours a week free—why, the authorities would have more young men than they would know what to do with. They could have 20,000 flying officers, the cream of the youth of the country, always in training, at the bare cost of the maintenance of the instructional staff and its equipment. So soon as a pilot or observer showed signs of becoming 'dud' and thus failing to pass regularly held tests his engagement would terminate.

"Such a scheme would give to the Government a huge flying *personnel*, ready for instant use in emergencies, at a minimum cost and without interfering with the civilian careers of those it employed."

The point the writer seems to have overlooked is that if such a reserve training were offered broadcast it must, as we have indicated, almost automatically

Flight—And the Men



Mr. ROBERT BLACKBURN, F.Ae.S., C.E., M.I.C.E.,
Managing Director of the Blackburn Aeroplane and Motor Co., Ltd.

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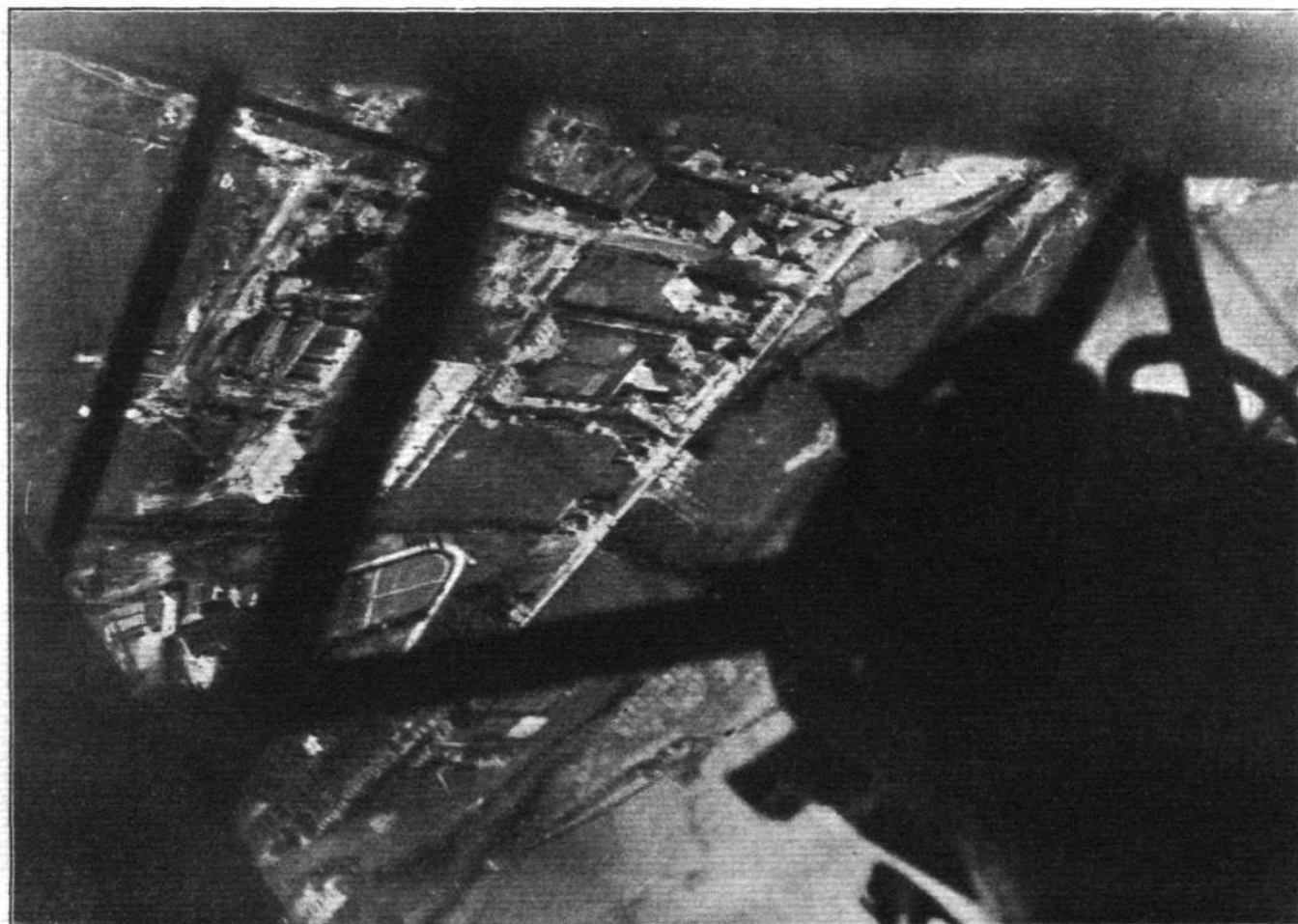
result in the elimination of an active force. What youngster would offer himself as a candidate for a regular Air Force commission, with its attendant disabilities of responsibility and submission to constant discipline, if he knew he could get his three hours' flying every week at the expense of sitting down to lectures for a similar period? Very few, we imagine.

It must not be supposed that we are in any way against the constitution of an adequate Air Force Reserve. On the contrary, we were, we believe, the very first to advocate a system similar to that of the Territorial Force in order that the country should not entirely lose touch with the men who have fought our battles in the air, and in order also that we should at all times maintain an adequate second line of aerial defence, ready to reinforce the active service units of the R.A.F. in case of war, and to provide the first means of replacing casualties. Pruned and adapted to the exigencies of the nation's needs, the scheme outlined by *The Times* correspondent is perfectly right in its conception. That it errs on the side of being too expansive is possibly a fault on the right side, on the principle that by asking a lot much may be given. Certainly it seems essential that the Government should, as early as possible, make up its mind as to what is to be done towards the constitution of such a Flying Reserve. It is clear that we must have a reserve, and it is equally clear that it can in the first instance be best drawn from the younger pilots and observers who have already served in the R.A.F. The time to catch them is now, before the keenness for flying has worn off, and when they would jump at the chance of maintaining their connection, through an Aerial T.F.,

with the R.A.F. If the matter is too long delayed it will be found that the best of these men will, in the meantime, have taken up other interests and pursuits, and it will be infinitely more difficult to get them back.

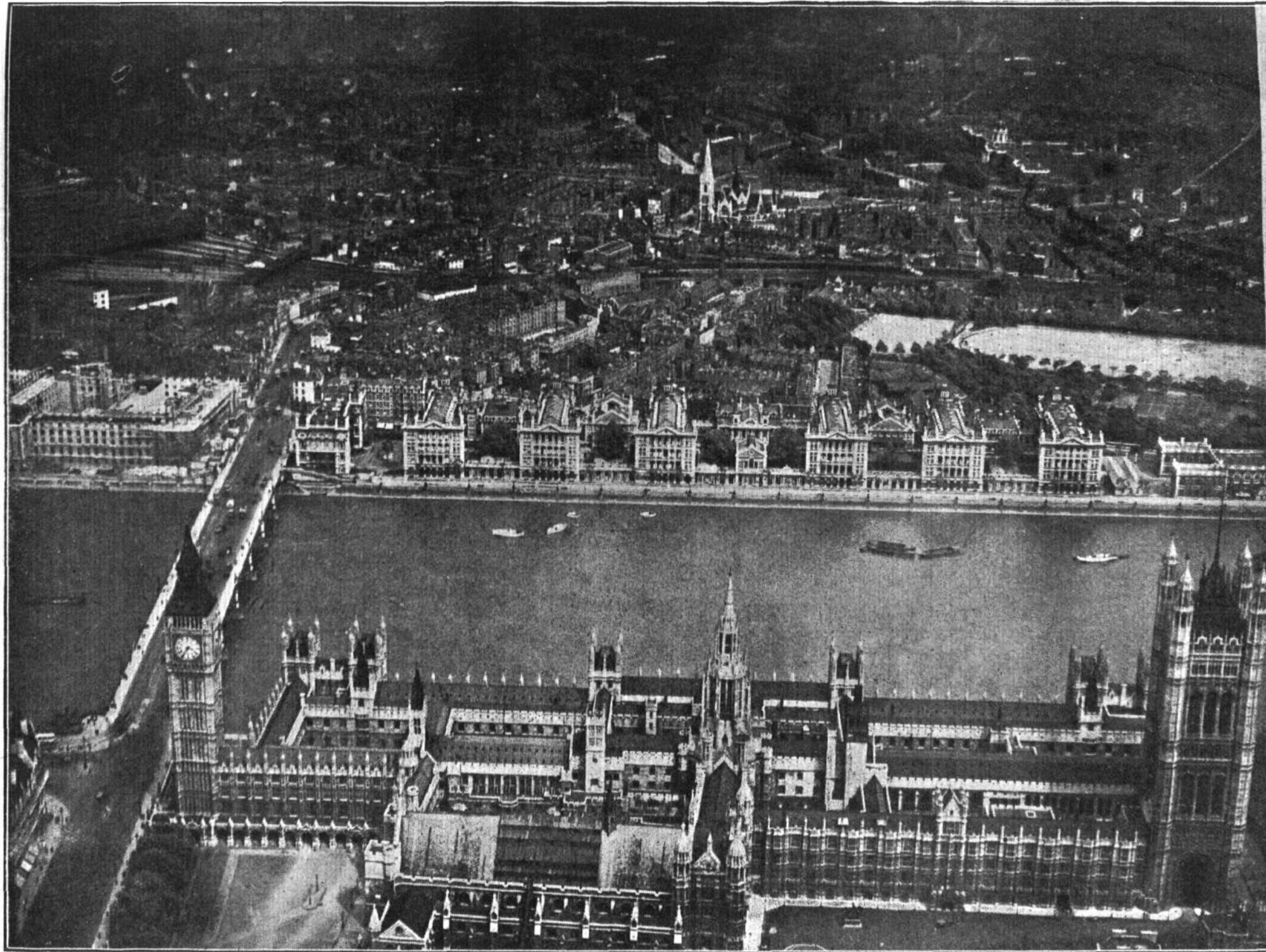
Air Ministry Publicity

In our issue of last week we spoke in terms of praise of the action of the Air Ministry in constituting a Publicity Department for the purpose of informing the public of the most interesting features of the work now going forward. Unfortunately, we are quite unable to congratulate the Ministry on the *communiqué* issued last week-end on the subject of the accuracy of Atlantic weather forecasts. Headed "Air Ministry News Story No. 29. For Immediate Publication," the appetite is whetted by the anticipation of something really useful or informative. Perusal, however, shows that it is a particularly lame attempt, of no interest to anyone, to show what fine fellows are the Ministry's meteorological experts. We have absolutely no criticism to offer of the work of the meteorological department, which is probably up to the very best standard permitted by present-day limitations of knowledge. What we do think, however, is that the issue of such a "News Story" is not quite worthy of a publicity department of a great Ministry. It is so obviously an effort to say something when the interests would have been better served by silence that it excites pity rather than blame. The effort is amateurish, and seems to indicate that the department needs to learn the lesson that when there is actually no news to give out it should be content to hold its peace and not to endeavour to manufacture fictitious interest.



A photographic record when in a spinning nose-dive, taken from a Boulton and Paul "Bourges." Note the effect of the ground appearing to be above the machine

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REAL VIEWS OF LONDON: The Houses of Parliament and St. Thomas's Hospital as photographed by the Aircraft Manufacturing Co., Ltd., to illustrate Mr. Holt Thomas's speech at the London Society on June 26. This photograph is quite a study in detail, showing as it does such landmarks as Westminster Bridge, Waterloo Station, L.C.C. Hall, Christ Church, Bethlehem Hospital, Lambeth Palace grounds, etc., etc.

THE CURTISS MODEL 18-B BIPLANE *

AFTER the successful trials of the Curtiss Model 18-T Triplane (described in *FLIGHT*, May 29 last), the two-seater 18-B Biplane was brought out by the Curtiss Engineering Corp. This machine is built around the same *fuselage* and power plant as the triplane, but having a lesser overall height the gunner has a wider arc of fire. The housing of the engine is particularly neat, it being entirely encased by cowling with the streamlined exhaust stacks projecting upwards. The cowling

indicated in the accompanying scale drawings, the ribs are spaced about 6 ins. apart, and instead of the usual two main spars, the Curtiss 18-B employs five—the idea being to more evenly distribute the loading on them.

The chord of the upper plane is 4 ft. 6 ins., and the front main wing spar is located 9 ins. from the leading edge, the fourth spar, which carries the rear body and interplane struts, being 2 ft. 9 ins. from the leading edge. The chord of



Three-quarter front view of the Curtiss 18-B biplane.

around the engine is removable, giving access for adjustment and repair.

As in the triplane, all interplane bracing cables are of true streamline section, and where cables cross one another they are clamped by streamlined blocks.

A peculiarity of this machine is in the employment of *ailerons* on the lower plane only. These *ailerons* are operated by steel tubes running through the lower plane and directly connected to the control column. This arrangement eliminates entirely all outside control cables and rigging. Rudders and elevators are operated by levers enclosed in the *fuselage* termination, thereby doing away with all outside control cables. There are no external braces for the stabiliser or fin.

The main planes are rectangular in plan form, and have no dihedral or sweepback. They are built up in five sections, three for the top and two for the lower. The centre section over the body is 2 ft. 6 ins. wide, and the outer sections of both top and bottom planes are 17 ft. 5½ ins. span. As

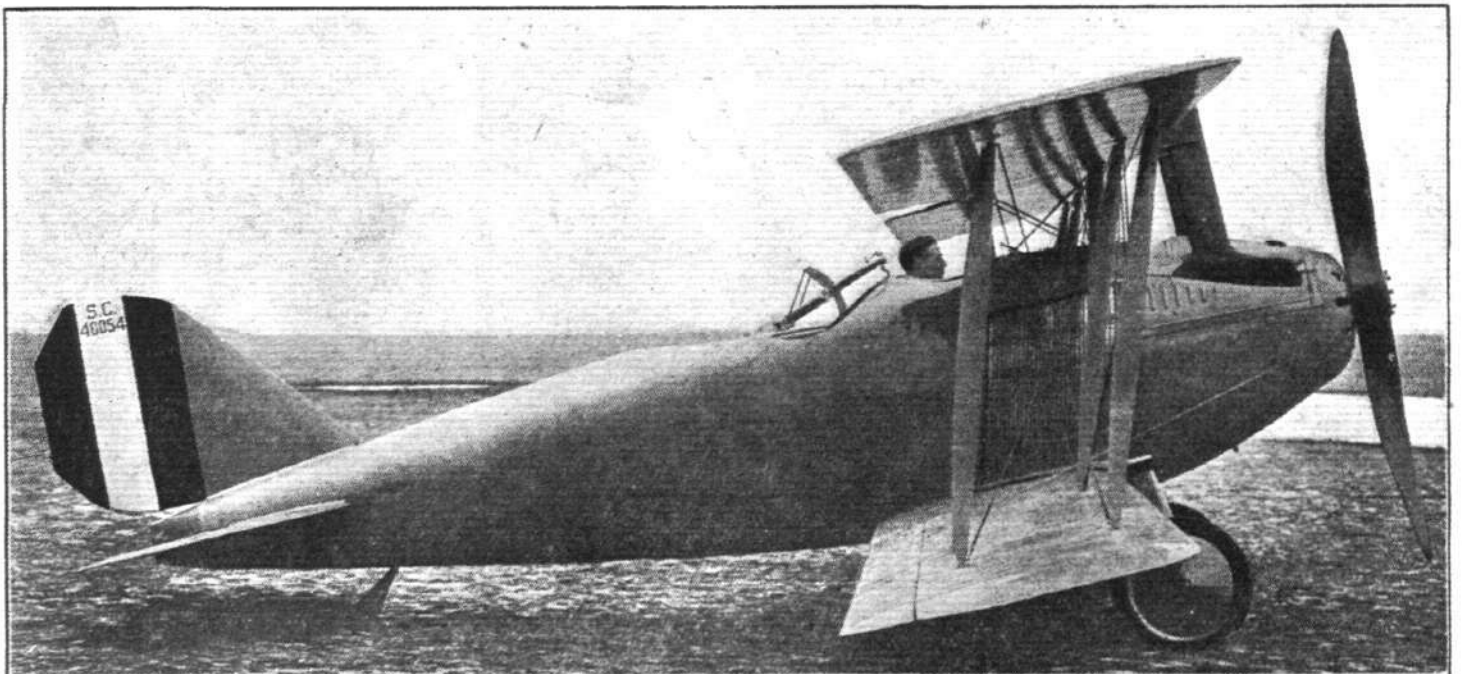
* Courtesy *Aerial Age*, U.S.A.

the lower plane is 4 ft., and its forward main spar is similarly placed 9 ins. from the leading edge, the other spars being spaced 7½ ins. apart.

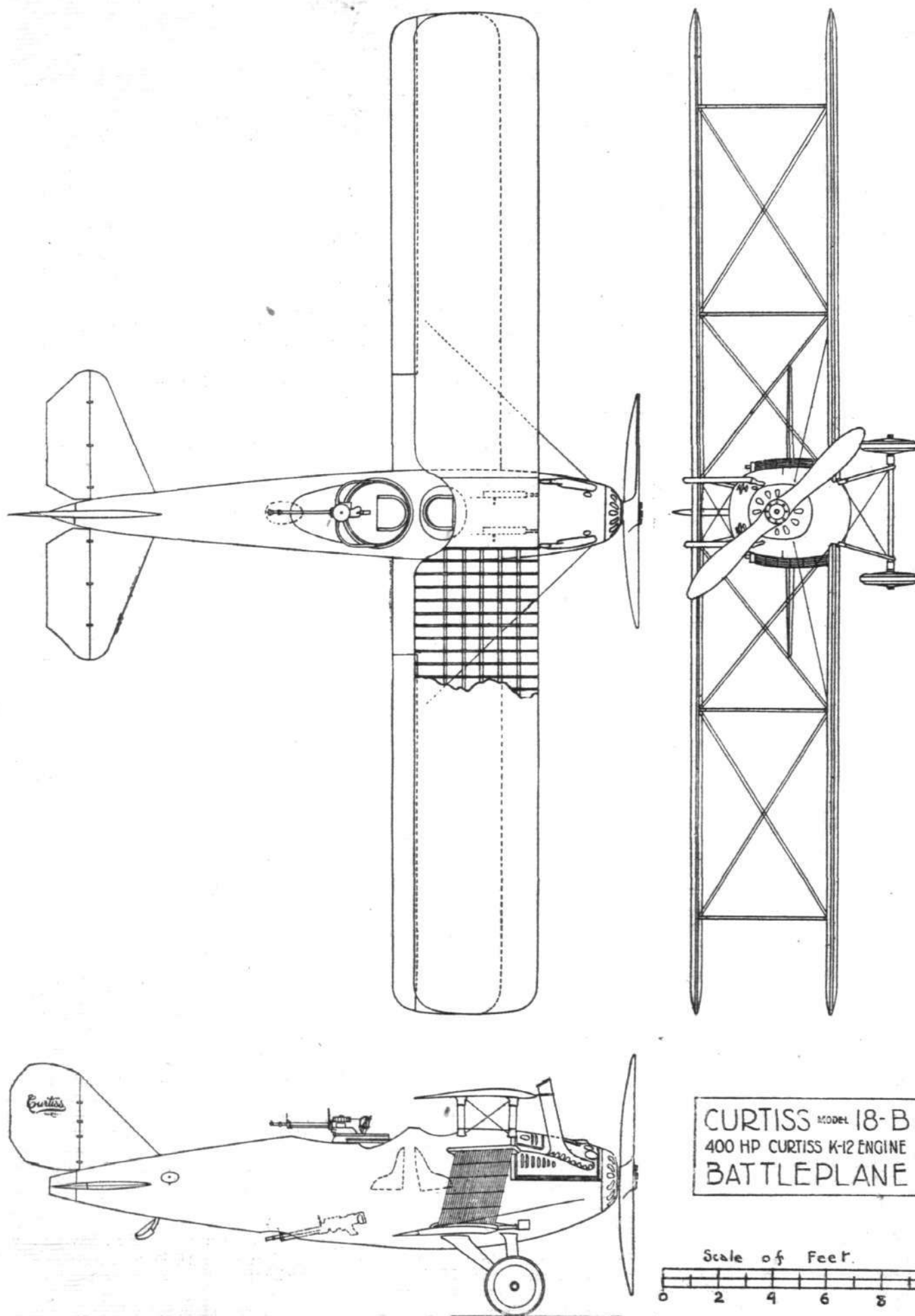
The *ailerons* on the lower plane have a very high aspect ratio, being 13 ft. 5½ ins. in length and 10¼ ins. chord. The intermediate interplane struts are centred 6 ft. 1½ ins. from the body struts, the outer interplane struts being 7 ft. 8½ ins. from former, leaving an overhang of 3 ft. 7½ ins.

The *fuselage* is of monocoque construction, finely streamlined, and 21 ft. in length. The pilot's cockpit is just below the trailing edge of the top plane, and aft of the pilot is the gunner's compartment so arranged that a wide range of fire is provided for the two Lewis machine guns, one of which is located on a rotatable scarf ring surrounding the cockpit, and the other fires through an opening in the underside of the *fuselage*.

The landing gear is of the V-type, and is similar to that on the 18-T Triplane. The track of the wheels is 4 ft. 11½ ins., the wheels themselves being 2 ft. 2 ins. diameter. The axle is located 3 ft. 8½ ins. from the nose of the *fuselage*, and 4 ft.



Side view of the Curtiss 18-B biplane.



THE CURTISS MODEL 18-B BIPLANE.—Plan, side and front elevations to scale.

1½ ins. below the line of thrust. With the machine in flying position, the centre of gravity of the machine occurs at a point 1 ft. 4.6 ins. behind the axle. When at rest on the ground, a straight line from the wheels to the tail skid makes an angle of 11° 15' with the centre line.

The tail consists of a small divided horizontal stabilizer with elevator flaps hinged to the trailing edges, a triangular vertical fin (3 ft. by 3 ft. 6 ins.) and an unbalanced rudder (3 ft. 10 ins. by 2 ft. 7½ ins.).

The engine is a Curtiss model K-12 12-cylinder V-type, with cylinders cast *en bloc*. Aluminium is used extensively in its construction. The bore and stroke is 4½ ins. and 6 ins. respectively, and the rated horse power at 2,500 r.p.m. is 400. Ignition is by two high-tension double spark "six-cylinder" magnetos, located at the forward end of the engine, and driven through flexible couplings by beveled gears from a vertical shaft. Two Duplex carburettors are used, located between the groups of cylinders. They are supplied with an auxiliary altitude hand-controlled air valve, and also with non-back-firing screen.

Without oil or water, the engine weighs 680 lbs.; the dead-weight per rated horse power being 1.7 lbs. The petrol consumption is at the rate of .55 lbs. per brake horse power per hour, and the oil, .03 lbs. per brake horse power per hour.

The tractor screw is 9 ft. in diameter, and when the machine is in flying position, the tips clear the ground by 8½ ins.

The general specifications of the 18-B biplane are as follows:—

Span, top and bottom planes ..	37 ft. 5½ ins.
Overall length	23 ft. 4 ins.
Overall height	8 ft. 10½ ins.
Chord, top plane	4 ft. 6 ins.
Chord, bottom plane	4 ft.
Gap	5 ft.
Stagger	1 ft. 4½ ins.
Weight, fully loaded	3,001 lbs.
Useful load	1,013 lbs.

Performance

Service ceiling	22,000 ft.
Maximum ceiling	23,000 ft.
Climb in 10 minutes	12,500 ft.
Climb in 10 minutes (light load)	16,000 ft.

	Sea Level.	5,000 ft.	10,000 ft.	15,000 ft.	20,000 ft.
High speed (m.p.h.) ..	160.5	158.5	157.5	155	152
Low speed (m.p.h.) ..	59	68.2	73.6	79.8	86
Economical (m.p.h.) ..	80	85	92	100	118
Rate of climb (ft. per minute) ..	2,390	1,690	1,040	580	210
Time of climb ..	0	2.5	6.3	12.9	27
Endurance (high speed) ..	283 miles			1.75 hours	
Endurance (economical speed)	536			6.7	

THE STRESSES IN BRACED STRUCTURES WITH RIGID JOINTS

IN regard to the article by Mr. John Case under above title, published in our issue of May 29, 1919, we have received the following queries:—

SIR,—It is with great interest that I have read Mr. John Case's article in *FLIGHT* on "The Stresses in Braced Structures with Rigid Joints," and hope to use the vital information therein practically in the near future. For some time it has appeared to me that the general practice (in small machines) of rigidly, or semi-rigidly attaching interplane struts to the top or bottom of the main spars is not a good one, and this especially so in all metal design.

Being a young engineer, and not the pure mathematician that might be desired, I now write in the hope of being enlightened on a few points, should you be sufficiently interested, and for which I can assure you I shall be more than obliged.

(i) Am I right in understanding that if in para. 7 "General Equations," all the couples are taken as zero, the case reduces to that of a structure in which every individual element has pin jointed ends?

(ii) Secondly, that if in Fig. 7, M'_1 , M'_2 , M'_3 , M'_4 , M'_5 , etc., are all zero, M'_1 , etc., will then equal M_1 , etc., respectively, and the case will reduce to that having continuous spars with pin jointed struts; i.e., the one you appear to recommend.

(iii) The results of the simple case worked out in para. 3 are very convincing, but surely the couples acting on the strut BB' in Fig. 1, where the spars ABC and A'B'C' are continuous throughout the joints, would not be so serious.

An actual example of this case also would make your theory more conclusive.

(iv) Finally, should not the two equations (25) be as follows:—

$$M_{12} = M'_2 - M_1 \\ \text{and } M'_{12} = N_1 - N_2$$

and not as printed.

Yours faithfully,

B. A. DUNCAN.

Ely, Cambs.

SIR,—I was much interested in Mr. John Case's article in *FLIGHT* of May 29 on "The Stresses in Braced Structures with Rigid Joints" as I am at present engaged on work of a somewhat similar nature. I note that he mentioned in the article that the trigonometrical and hyperbolic functions

required in solving problems of the nature referred to have been tabulated by Mr. Arthur Berry, but does not mention in what book or periodical these tables have been published. I should be very much obliged if you could supply this information.

G. W. HIGGS WALKER.

Hendon, N.W.

We have submitted these queries to Mr. John Case, whose replies follow.—ED.

In reply to Mr. Duncan's queries:—

(i) Yes.

(ii) Yes. $M'_3 = M_2$, etc., unless there be "offset" couples due to the lift-wires. In this case the difference between M'_3 and M_2 , etc., will equal the applied couple.

(iv) Yes. I am obliged to Mr. Duncan for pointing out the slip in equations (25) which should read as he says.

(iii) The example which I chose was, deliberately, a rather extreme case for the purpose of calling attention to what may be a serious matter, and also because it was easy to work out. When the spar is continuous over a strut the couples applied to the latter will certainly be reduced; from one or two cases which I have worked out one can say that the effect is of the order of half that shown in the example given. This would be serious enough, for it must be remembered that, when the load on a strut is approaching anywhere near the crippling load, a very small end-couple will be sufficient to bring about failure. Certainly struts do not often break in the air, but that is because they are always more or less pin-jointed; in practice they deflect long before the crippling load is reached and the addition of any (small) end-couple will greatly increase the stress and hasten failure. In civil engineering—bridges—where the members are all rigidly rivetted together, it is usually the compression members which give trouble; the collapse of the old Quebec bridge was due to secondary stresses in a compression boom.

With regard to Mr. Walker's query: the tables referred to were compiled by Mr. Arthur Berry, King's College, Cambridge, and have been published confidentially, during the War, in Air Board Publication C.I.M. 9, and in the handbook of Strength Calculations, written by Pippard and Pritchard and published by the Air Ministry. I suppose in due course these documents will be made public.

On Tuesday R 33 returned to her moorings, having covered the 900 miles mapped out in 31 hours. Dwellers in the Midland towns passed over were vastly interested in this novel visitor.

Yatesbury and Wyton Aerodromes Closed.

THE Air Ministry announces that the R.A.F. Eastern aerodrome at Yatesbury has been closed. All machines landing at Yatesbury should, therefore, use the Western aerodrome. The aerodrome at Wyton has also been relinquished by the R.A.F.

R 33 Keeping Her Hand in.

By way of keeping up practice, and incidentally to help to give the Victory Loan a fillip the Armstrong-Whitworth rigid airship R 33 this week carried through quite a respectable little tour over England. The trip was timed for about 36 hours, the starting-point being Pulham Air Station at 8 a.m. In less than an hour and a half Swaffham was reached. Peterborough was passed before eleven o'clock, and Grantham and Nottingham by midday. Making Liverpool in the evening, the Victory Loan ship passed seaward.

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

TECHNICAL AND COMPETITIONS COMMITTEE

A MEETING of the Technical and Competitions Committee was held on Tuesday last, July 8, 1919, when there were present:—Lieut.-Col. F. K. McClean, in the Chair, Lieut.-Col. D. Harries, Maj. R. H. Mayo, Lieut.-Col. Alec Ogilvie, Lieut.-Col. H. T. Tizard, Mr. Howard T. Wright, and Mr. Harold E. Perrin, Secretary.

Jacques Schneider Cup.—The arrangements for the Jacques Schneider Cup were discussed.

It was decided to hold the Race on September 10, 1919, and that the British Competitors must have their machines ready not later than September 1, 1919, in case it is necessary to hold eliminating trials for the selection of the three competitors to represent the British Empire.

The course for the race will be announced later.

Presentations to the Club

The following framed prints have been presented to the Club by Capt. C. E. Bagram:—

Globe Aérostatique de Charles et Robert 1783.

A consultation previous to an Aerial Voyage from London to Weilburg in Nassau, 7th November, 1836.

The following Map has been presented to the Club by Miss Lockyer:—

"Time Map of the World."

The following books have been presented by the Publishers to the Club Library:—

"Airy Nothings," by H. Barber. (Published by McBride, Nast and Co.)

"Aerobatics," by H. Barber. (Published by McBride, Nast and Co.)

"In the Royal Naval Air Service," by Harold Rosher. (Published by Chatto and Windus.)

"Guynemer: Knight of the Air," by Henry Bordeaux. (Published by Chatto and Windus.)

"All about Aircraft." (Published by the Car Publishing Co.)

"Aircraft in War and Commerce." (Published by the Car Publishing Co.)

"The Kingdom of the Air." (Published by the Car Publishing Co.)

"V.C.'s. of the Air." (Published by the Car Publishing Co.)

"The World's Air Routes." (Published by the Car Publishing Co.)

FLYING SERVICES FUND COMMITTEE

A MEETING of the Flying Services Fund Committee was held on Wednesday, June 18, 1919, when there were present:—Lieut.-Col. T. O'B. Hubbard, M.C., R.A.F., in the Chair, Mr. Chester Fox and Mr. Harold E. Perrin, Secretary.

Grants and Allowances.—The following Grants and Allowances were made:—

(121) An allowance of £2 a month for six months to the widow of a 2nd Class Air-Mechanic in the Royal Flying Corps who had died on active service.

(122) An allowance of £5 a month for six months to the widow of a 2nd Class Air-Mechanic in the Royal Flying Corps who had died on active service.

(197) A Grant of £15 to the mother of a Flight Cadet in the Royal Air Force who had been killed on active service.

(200) A Grant of £10 to an Ex-Corporal in the Royal Flying Corps who had been incapacitated on active service.

(201) An allowance of £2 a month for six months to the mother of a Sergeant-Mechanic in the Royal Air Force who had died on active service.

(204) An allowance of £2 a month for twelve months, for the upbringing of her child, to the widow of a 2nd Class Air-Mechanic in the Royal Air Force who had been killed on active service.

(211) A Grant of £5 to the widow of a Private in the Royal Air Force who had died on active service.

(212) An allowance of £1 10s. a month for six months to the mother of a 2nd Class Air-Mechanic in the Royal Naval Air Service who had been killed on active service.

(213) An allowance of £2 a month for six months to the widow of a Chief Mechanic in the Royal Air Force who had died on active service.

(214) A Grant of £10 and an allowance of £2 a month for six months to the widow of a Private in the Royal Air Force who had died on active service.

(216) An allowance of £2 a month for six months to the widow of a Private in the Royal Air Force who had been killed on active service.

(218) An allowance of £2 a month for six months to the widow of a Private in the Royal Air Force who had been killed on active service.

(219) An allowance of £1 10s. a month for six months to the widow of a 3rd Class Air-Mechanic in the Royal Air Force who had died on active service.

Offices: THE ROYAL AERO CLUB,

3, CLIFFORD STREET, LONDON, W. 1.

H. E. PERRIN, Secretary.

The Handley-Page Accident

THE Handley-Page machine which has been waiting for favourable weather at Newfoundland for over two months was beginning to suffer from the effects of standing out in the open. It was, therefore, decided that she should go up and join the "R.34" and accompany her to Mineola. When it was announced that she had abandoned the Transatlantic attempt, the Atlantic City municipality wired an invitation to Admiral Mark Kerr, which he accepted. The machine left Newfoundland and started on her journey to New York. When over Nova Scotia trouble arose with the oil-feed to one of the engines and in spite of the efforts of Maj. Tryggve Gran, who climbed out on the wing to attempt to remedy it, it was found impossible to make good the job while in the air. The machine, however, continued to cruise about for a considerable time, whilst seeking for a suitable landing ground. She finally came down at Parrsborough, Nova Scotia, at daybreak. A Reuter message from Parrsborough says that the Handley-Page's lights were first seen off the harbour mouth at two o'clock in the morning, after which she cruised overhead until daybreak. The pilot then tried to effect a landing on the race track, but the machine overran the track and struck a wire fence, puncturing her tyre. Subsequently she encountered a tree, which threw the machine's head round. As a result one of the wheels of the under-carriage was wrenched off. The Handley-Page finally crashed nose down and is now standing on end, with the pilot-house smashed and the right wing slightly damaged.

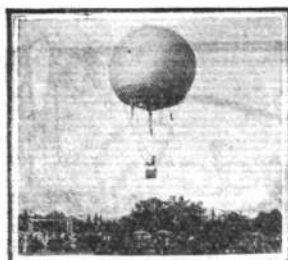
In connection with the mishap of the Handley-Page it is of interest to learn that Messrs. Rolls-Royce, Ltd., have received the following telegram from Admiral Mark Kerr, who was in charge of the machine: *Engines were splendid. When oil-feed pipe broke engine worked for at least two hours.*

Officers' Gratuities—Investment in Victory Loan

THE Air Ministry announces:—

It has been decided that the gratuities to which regular and temporary officers of the Army and Air Force at present serving will become eligible may now be invested in either Victory Bonds or Funding Loan.

Officers who have not already made arrangements with their agents or bankers to take up War Loan in anticipation of the receipt of their gratuities, and who wish to take advantage of this concession, should immediately inform (by telegram if necessary) their Army and Air Force agents stating the precise sum they wish invested. Applications must be received on or before July 12, the day the Loan closes, and must clearly state that the investment is to be made from the officer's gratuity, and that the amount required is in addition to any sum for which he may already have applied. The investment will be handed over to the agents on the officer's behalf for issue with any balance of gratuity. Gratuity so invested will bear interest as from August 4, 1919. Income Tax will not be deducted at the source.



THE TRANSATLANTIC VOYAGE OF R 34

THE Transatlantic voyage has at last been accomplished by an airship. The R 34 has arrived at Mineola, Long Island, under her own power, after being in the air for 108 hours 12 minutes. In connection with this splendid achievement it may be of interest to recall an unsuccessful attempt made nine years ago.

A Previous Attempt

We are referring to the Wellman airship "America," on which Mr. Walter Wellman intended to make the trip from Atlantic City to London. It may be remembered that previously Mr. Wellman had made an attempt to reach the North Pole by airship, the venture, however, being unsuccessful, and the airship coming to grief. The rebuilt airship, "America II," had a length of 228 ft., and a maximum diameter of 52 ft., while her capacity was about 350,000 cub. ft. The power plant consisted of two engines of 80 h.p. each. A smaller engine of about 10 h.p. supplied air to the balloonets. The two engines were mounted transversely in the keel of the airship, each driving two airscrews through bevel gearing. The screws of the aft engine were of the swivelling type to allow of steering in a vertical plane and also to give direct lift or anti-lift when the airship was about to ascend or alight. There was a long keel extending nearly the whole length of the envelope, and in this enclosed keel were the crew's quarters. Slung underneath the keel was a lifeboat stocked with provisions. The most novel feature

of the Wellman airship was the equilibrator, which was intended to keep the airship at a more or less constant altitude, and which consisted of 30 cylindrical tanks strung together on a steel cable of some 330 ft. length. As the airship tended to rise she had to support an increased length of this cable, while if she lost lift she descended and a greater proportion of the cable became submerged in and supported by the sea. Ingenious as this arrangement was, it ultimately proved to be the undoing of the airship.

After waiting for favourable weather Mr. Wellman decided to make a start, and at 8 o'clock on the morning of Saturday, October 15, 1910, he announced that everything was ready and that the conditions were favourable. He, therefore, climbed aboard with his companions, including Capt. Murray Simon (pilot), Mr. Melvin Vaniman (engineer), Mr. Jack Irwin (wireless operator), and Messrs. F. B. Aubrey and Louis Lond (mechanics), and in the presence of an enthusiastic crowd the "America II" rose from her moorings at Atlantic City and headed out to sea where she was soon lost in a thick fog. During the day numerous messages were received by wireless from the airship, and everything seemed to indicate that good progress was being made. On the following (Sunday) morning the airship was reported off Nantucket, and Mr. Wellman's message was "Going O.K." After that no further news was heard of the airship until the Tuesday afternoon, and there was naturally a great deal of anxiety felt at the absence of news. Finally on the Tuesday afternoon, a wireless message was received from the R.M.S. *Trent* saying that in answer to a distress signal by the airship the *Trent* had stood by and had rescued the crew. When it was found that the equilibrator, from which so much had been expected, prevented the airship from being steered properly and also gave rise to serious vibration on account of being dragged through a rising sea, preparations were made for launching the lifeboat, and after the airship had been brought down close to the sea the crew got into the boat and were later picked up by the *Trent*. The airship after being relieved of so much weight, rose to a great height and soon disappeared. Thus ended this plucky attempt to cross the Atlantic by airship, and it has remained for a British airship, manned by a British crew, to accomplish this feat.

The Successful Voyage of R 34

After many hours of anxiety, chiefly caused by the knowledge that the fuel supply must be running low, the R 34 and her gallant crew arrived at their destination at 3 p.m. (British Summer Time) on Sunday last, July 6. The landing of the airship is thus described by *The Times* special correspondent:—

"With the band playing 'God Save the King' and thousands of spectators standing bareheaded, the R 34 dipped groundwards and dropped anchor at 10 o'clock this morning, after a voyage which up to late last night even experts feared might end in disaster.

"It was at 8.55 that the news that the giant airship was overhead brought the thousand inhabitants of Garden City and Mineola into the streets to see the R 34 slowly circling overhead as she manœuvred herself in position for landing. The number was clearly visible on her side, and her great bulk was gleaming in the morning sunshine.

"Almost immediately streams of motor-cars appeared on the roads leading to the aerodrome. A few minutes later a shout went up as a tiny object detached itself from the rear gondola and floated earthwards. It was Maj. John Pritchard, who had jumped out in a parachute to give landing instructions. He came to earth in front of the grand stand and was taken to headquarters on a motor-cycle.

"Meanwhile the R 34 continued to circle above Roosevelt Field. Soon she released a quantity of ballast from the stern, her nose dipped, and, shutting off the forward propeller, she came slowly earthwards. At a height of about 300 ft,



Brig.-Gen. E. M. Maitland, C.M.G., D.S.O.

she dropped an anchor, which the landing parties seized and began to haul her to earth. At one minute past ten the first gondola touched the ground, the long and perilous voyage over. She had just enough petrol left to have enabled her to fly 40 minutes more.

"One of the first to descend from the forward car was Gen. Maitland, who was greeted by officers of the United States Air Service, headed by Gen. Minoher, Director of Aeronautics. Gen. Maitland was smiling and cheerful, though he appeared tired. 'We are all pretty fit,' he said, when asked how he had fared on the journey. Describing the voyage, he said they had been much worried by winds, 'and last night two thunderstorms shook us up badly,' he added. The fog troubled them little. The total time of the voyage was 108 hours 12 minutes, it was a non-stop flight, made entirely under their own power. As soon as the landing parties had made the airship fast, the crew descended to solid ground and immediately began to stretch their legs. Hot coffee, food, soap and water were their immediate needs, and these were supplied on the spot in plenty.

"The ship is absolutely none the worse for her journey and suffered no damage in landing. It is hard when looking at her to realise that she has just completed so vast a journey and will in 48 hours calmly undertake another.

until her arrival at Mineola at 3 p.m. (B.S.T.) on Sunday, July 5:—

Wednesday, July 2,

5.30 a.m.—The British airship R 34 passed over Rathlin, county Antrim, at 4.30 G.M.T. (5.30 British summer time) this morning.

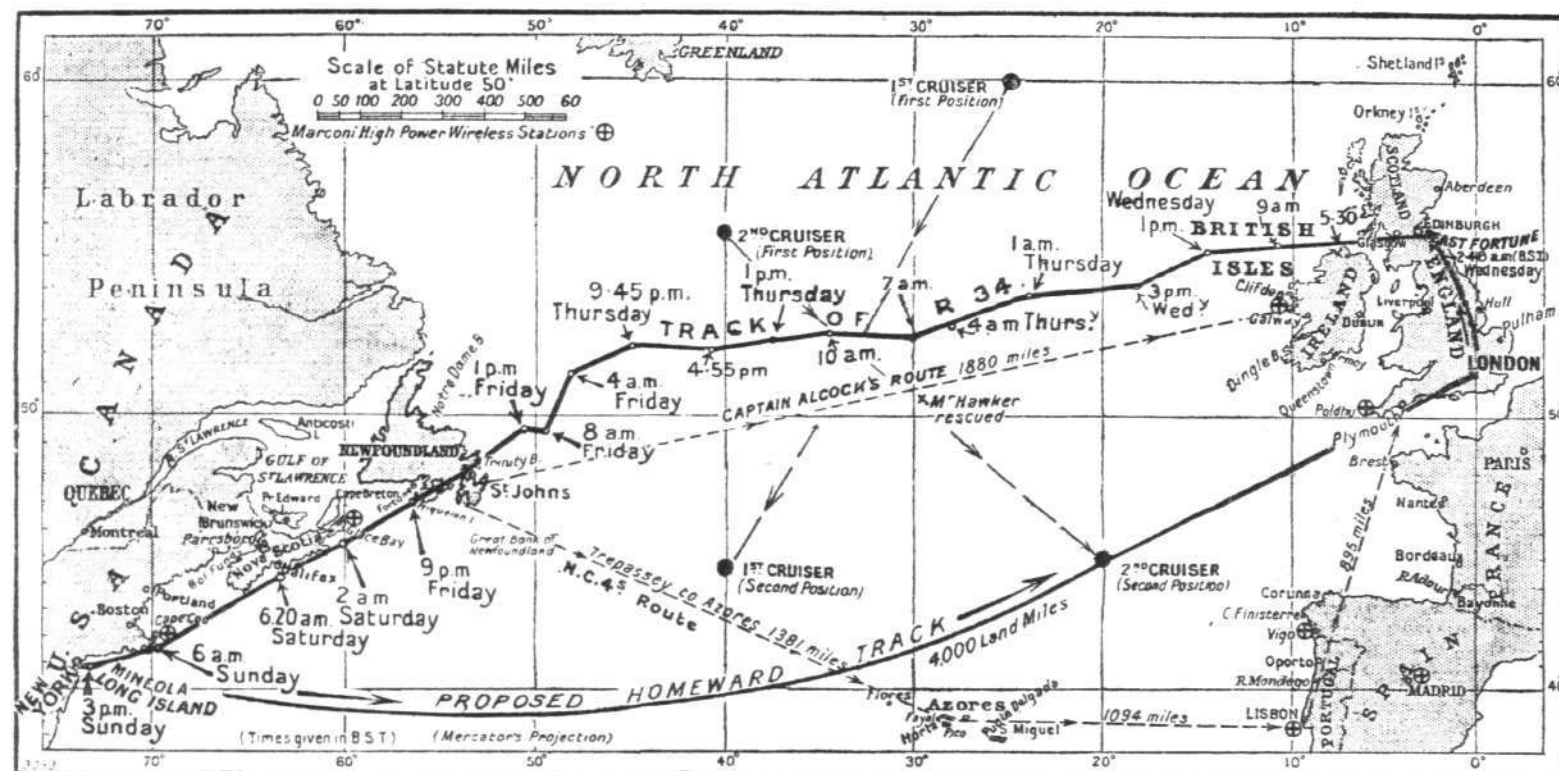
9.0 a.m.—The R 34 at 8 a.m. G.M.T. (9 a.m. British summer time), was 10 deg. 40 min. W., 55 deg. 20 min. N. The airship was then taking a course due West at a speed of 40 knots.

11.5 a.m.—Going through thick fog. Everything doing well. Time of despatch 10.05 G.M.T. (11.5 a.m. British summer time).

1.0 p.m.—The R 34 is reported by wireless to have reached at 1 p.m. to-day (British summer time) the position 55 deg. 07 N., 14 deg. 50 W. She was then proceeding at a speed of 32 knots in a thick fog. The officer in charge reports all well.

3.15 p.m.—A wireless message from the R 34, at 3.15 p.m. (British summer time), gave the airship's position as 53 deg. 50 N., 17 deg. 50 W. The course then being taken was West true and the speed 31 knots.

5.30 p.m.—The following signal has been received from



CROSSING THE ATLANTIC BY AIRSHIP: The course of R 34 in her journey from East Fortune, Scotland, to Mineola, Long Island, New York, a distance of 3,130 sea miles, accomplished in 108 hours. The R 34 ran into heavy storms off Newfoundland and Nova Scotia. From a *Times* map of July 7, and incorporating the British cruisers' positions and, approximately, the proposed homeward track of R 34.

"Her appearance this morning took every one by surprise after a night of anxious waiting. The last messages received had reported her in distress over the sea, using up her last few gallons of petrol. Late last night 200 men with supplies of petrol and hydrogen were dispatched from here by special train to Montauk, at the northern extremity of Long Island, in case the ship succeeded in reaching there. However, she sailed calmly into sight early this morning and made a successful landing as the climax of a triumphal voyage.

"Now she lies at rest in the middle of Roosevelt Field, while motor cars from every part of Long Island disgorge thousands of people who have come to behold the latest wonder of the world."

On the accompanying sketch map, prepared from the chart published in *The Times* of July 7, the various positions of the R 34 as indicated by wireless messages are shown. In order to render the map more complete we have added the approximate course which the airship proposes to follow on her return journey. It is hoped that on this she will pass over London on her way back to her starting point at East Fortune. The following messages from the airship herself, and from ships and wireless stations, form a very good record of the progress of the R 34 from the time she started from East Fortune (on July 2, 2.38 a.m. British summer time)

R 34: "Position at 4.30 p.m. G.M.T., 53.50 N., 18 W.; all well."

The Air Ministry adds: "The position given in the previous signal is probably incorrect and may possibly have been wrongly transmitted. The position indicated in the above message is very probably correct."

7.23 p.m.—The Air Ministry announced at 6.23 p.m. G.M.T.: "In answer to a wireless message sent from East Fortune this afternoon to R 34, asking whether she was getting sufficient weather reports, the following reply has been received: 'Yes, thanks. We are in touch with Ponta Delgada (Azores), with St. John's (N.F.), and with Clifden, Ireland.'"

8.0 p.m.—The ss. *Suffern* reports having sighted the R 34 at 7 p.m. Greenwich mean time in the position 54.30 North, 18.20 West, steering South, 80.00 West true.

9.15 p.m.—The Air Ministry announces that Maj. Scott reported that at 8.15 p.m. G.M.T. R 34 was flying westward at 30 knots and at a height of 2,000 ft.

UNTIMED.—British ship, code signed G.B.R. (name unknown) reports:—"Following message from R 34: 'Flying at 2,000 ft.; brilliant sunshine above clouds. Give me your position.' Position given 54.30 N., 18.20 W. Answer: 'Arrive about Friday morning. Report speaking us.'"

miles. Capt. David, the commander, wishes us a safe voyage. We gaze through our glasses in her direction, but she is just over the horizon.

"2 p.m.—Slight trouble in the starboard amidships engine—cracked cylinder water-jacket. Shotter made a quick and safe repair with a piece of copper sheeting, and the entire supply of the ship's chewing-gum, which had to be chewed by himself and two engineers before being applied.

"4.30 p.m.—Now on the Canadian summer route for steamers bound for the St. Lawrence, *via* Belleisle Strait and the well-known Labrador current. There are already indications of these cold currents in the fog which hangs immediately above the surface of the water. Scott and Cook spend much time at the chart table, measuring angles of drift and calculating the course. Aerial navigation is more complicated than navigation on the surface of the sea, but there is no reason why, when we know more about the air and its peculiarities, it should not be made just as accurate.

"5 p.m.—Harris unwisely shuts his hand in the door of the wireless cabin. Injury painful, but not serious. Flow of language not audible to me, as forward engine happened to be running.

"6.30 p.m.—We are gradually getting further and further into the shallow depression reported yesterday coming from the South Atlantic. For the last four hours the sea has been rising. Now the wind is south-south-east, velocity 45 miles an hour. Visibility only half a mile. Very rough sea. Torrents of rain. Despite this the ship is remarkably steady. At 8 p.m. Scott decided to climb right through it, and we eventually came out over the top of it at 3,400 ft.

"8.30 p.m.—We now passed the centre of the depression, exactly as Harris foretold. Rain has ceased, and we are travelling quite smoothly again. To the west the clouds have lifted, and we see an extraordinarily interesting sky, black, angry clouds giving place to clouds of grey mouse-colour, then bright salmon-pink and a clear sky, changing lower down on the horizon to darker clouds, with a rich golden lining as the sun sinks low.

"The surface of the sea is invisible, being covered with a fluffy grey feather-bed of clouds slightly undulating and extending as far as the eye can reach. The moon is just breaking through the black clouds immediately above it. East and west the clouds are black, owing to the ominous depression from which we have just emerged, while away to the south the cloud-bed over which we are passing seems to end suddenly and merge into the horizon. We are getting some valuable meteorological data on this flight without doubt, and each fresh phenomenon as it appears is instantly explained by the ever-alert Harris, who has a profound knowledge of his subject.

"9 p.m.—One of the engineers has reported sick. He complains of feverishness. A stowaway has just been discovered, a cat smuggled on board by one of the crew for luck. It is very remarkable that nearly every member of the crew has a mascot of some description, from an engineer officer who wears one of his wife's silk stockings as a muffler, to Maj. Scott, the captain, with a small gold charm called "Thumbs Up."

"4.30 a.m., Friday, July 4.—A wonderful sunrise, the different colours being the softest imaginable—just like a wash drawing.

"7 a.m.—Height 1,000 ft. Bright blue sky above, a thin fog partly obscuring the sea beneath. Sea moderate, but a big swell.

"The fog bank appears to end abruptly 10 miles towards the south, where the sea appears clear of fog. It is a very deep blue, and standing out conspicuously is an enormous white iceberg. The sun is shining brightly on its steep sides, and we estimate roughly that it is 300 yards square and 150 ft. high. Another big iceberg is seen in the dim distance. These are the only two objects of any kind we have yet seen on this journey.

"8.15 a.m.—The fog is still clinging to the surface of the water. The water is evidently very cold. There is an extraordinary wave-like appearance in the clouds, which are rolling up from the north. Underneath, on the port beam, there is a long stretch of clear, blue sea, sandwiched between wide expanses of fog on either side, looking just like a blue river flowing between two wide, snow-covered banks. This is caused by a warm current of water which prevents the cloud from hanging over it. This illustrates the rule that over cold currents of water the clouds cling to the surface.

"9.0 a.m.—We are now over a large ice-field, and the sea is full of enormous pieces of ice, small bergs in themselves. The ice is blue-green under the water, with frozen snow on top.

"1.50 p.m.—Land in sight, first spotted by Scott on the

starboard beam. A few small rocky islands were visible for a minute or two through the clouds, but were instantly swallowed up again. Altered course to the south-west to have a closer look. Eventually made them out to be the north-west coast-line of Trinity Bay. Our time from Rathlin Island, the last piece of land we crossed off the shore of the north coast of Ireland, to the north coast of Trinity Bay, Newfoundland, is exactly 59 hours.

"2.30 p.m.—We are crossing Newfoundland at 1,500 ft. in thick fog, which gradually clears as we get further inland. Message from St. John's to say Raynham has gone up in his machine to greet us. We replied, giving our position.

"3 p.m.—Again enveloped dense fog. Message from Sentinel giving us our position. We are making good 38 to 40 knots, and heading for Fortune Harbour.

"4.30 p.m.—We passed out of Fortune Harbour with its magnificent scenery into azure blue sea dotted with little white sailing ships, and are now over the two French islands of Miquelon and St. Pierre, steering a course for Halifax.

"7.45 p.m.—Passed over tramp steamer *Seal*, bound for Sydney (Nova Scotia), from St. John's, the first we have seen.

"8.15 p.m.—Clear weather, Sea moderate. Making good 30 miles per hour with three engines. The northern point of Cape Breton Island is just coming into sight; lighthouse with four flashes.

"Saturday, July 5, 2.30 a.m.—Very dark, clear night. The lights of Whitehaven show brightly on the starboard side, and we can make out the lights of a steamer passing us to the east. Strong head wind against us. Making no appreciable headway.

"7.0 a.m.—Scott decided to turn inland to avoid the south-west wind barrage blowing up the coast. Crossed coast at Goose Island and Country Harbour. Miles and miles of endless forests. Here and there a clearing with a hut or two, and a few cows and an acre or so of cultivated land. Any number of small rivers and lakes.

"10.20 a.m.—We came down as low as 800 ft. over huge forests of lovely resinous small pines, the scent of which we inhale with delight. The stacked tree-trunks look like bunches of asparagus from above put end up. We saw a big brown eagle. We all agree that we must come to Nova Scotia for shooting and fishing.

"12.30 p.m.—Lunch. The petrol question has become distinctly serious. Shotter has been totalling up the available petrol resources with anxious care. We have 500 miles to go to New York, and, if we do not get any wind or bad weather against us, we will do it all right with two engines, assisted occasionally by the third engine. We can't afford to run all five at once owing to the petrol consumption. Lieut.-Com. Lansdowne, of the United States Naval Airship Service, sends a signal on behalf of 'R.34' to the United States authorities at Washington and Boston to send destroyer to take us in tow in case we should run out of petrol during the night.

"The idea is that we could then be towed by a destroyer during the hours of darkness and at dawn cast off and fly to Long Island under our own power. Let us hope that this won't be necessary. It is now rainy and foggy, which is the kind of weather that suits us now, as rain generally means no wind.

"3.0 p.m.—Passed Haute Island in the Bay of Fundy.

"3.30 p.m.—For some little while past there have been distinct evidences of electrical disturbances. Atmospheric are very bad. A severe thunderstorm was seen over the Canadian coast moving south down the coast. Major Scott turned east off his course to dodge the storm, putting on all engines. In this, fortunately for us, he was successful, and we passed through the outer edge of the storm. We had a very bad time indeed, and it is quite the worst experience from the weather point of view that any of us has yet experienced in the air. During the storm some wonderful specimens of cumulo-stratus were seen and photographed. These clouds always indicate a very highly perturbed state of the atmosphere, and look rather like a bunch of grapes.

"7.30 p.m.—We are now in clear weather again, and have left Nova Scotia well behind, heading straight for New York. A particularly fine electrical disturbance at time of sunset.

"9.30 p.m.—Another thunderstorm. Again we have to change our course to avoid it, and every gallon of petrol worth its weight in gold. It almost breaks our hearts to have to lengthen the distance to get clear of these storms.

"July 6, 4 a.m.—Sighted American coast at Chatham.

"4.25 a.m.—Are over the south end of Mahoney Island. Scott wondering whether petrol will allow him to go to New York or whether it would not be more prudent to land at Montauk.

"5.30 a.m.—Passing Martha's Vineyard, a lovely island, beautifully wooded. Scott decided he could just get through

to the landing at Hazelhurst Field, but that there would not be enough petrol to fly over New York. Very sad, but there is no alternative. We will fly over New York on the start of our return journey on Tuesday night, weather and circumstances permitting.

"Landing 1.54 p.m., Greenwich mean time, or 9.54 a.m. United States summer time, at Hazelhurst Field, Long Island. "Total time entire voyage 108 hours 12 mins."

While General Maitland's log briefly indicates the progress of "R.34" from time to time, it will be of interest to record what in the meantime took place ashore, where great anxiety was naturally felt for the safety of the airship and as to whether or not she would have sufficient petrol to reach Mineola. The *Times* correspondent at Mineola describes what was taking place there during the last part of the journey and says:—

"The 'R.34' landed at Mineola at 9.55 this morning under her own power.

"The landing came as a relief after a night of anxious waiting. Yesterday evening there was real anxiety at Roosevelt Field. Despatches came in that the airship was cruising slowly south-west along the Canadian coast into head winds. Dismal pictures flitted into the watchers' minds of possibilities of her running with none too much petrol to spare into thunderstorms brought on by the great heat under which this part of the Continent is sweltering. The vicious currents at the Bay of Fundy were anxiously canvassed.

"The climax came when a message was received at 9.36 p.m. by one of the Navy wireless stations, saying 'Rush help, making for Boston, from Bay of Fundy at 23 knots. Come quickly. Gasolene giving out. Send ship.' At 11 p.m. anxiety was relieved by another message by way of the Ottercliff wireless station which, though it indicated a great shortage of gasolene, showed that there was good hope of landing. The message ran:—Following received from 'R.34':—'Position "R.34" 67.30 W., 43.20 N.; course S.W. by S. by magnetic compass; flying 1,500 ft. Come and meet us; making for Boston. Rush; very short of gasolene.'

"U.S. Naval Help

"Could a landing be made near Boston was then the question uppermost in everybody's mind. Its answer was not reassuring, and the anxious vigil continued. It was, however, assuaged somewhat by the knowledge that the American Navy was doing everything possible. As soon as the two messages given above were received Admiral Benson, Chief of Naval Operations, sent out instructions.

"A message from the Ottercliff station filed at 11.30 p.m. read as follows:—'U.S. *Bancroft* trailing the "R.34".' Then came the news that another destroyer had seen the airship. 'U.S. *Stevens* at 11.3 p.m., Washington time, reports position 45.50 N., 66.50 W.' Orders were sent from Washington to the *Stevens* to proceed at full speed toward the dirigible's position, trying to establish radio communication. Early this morning this message came from the *Bancroft* showing that the 'R.34' might be able to reach Chatham. It read:—'To Commandant, First Naval District: position 41.52 N., 58.04 W., headed for Chatham at 23 or 24 knots. "R.34" thinks fuel will hold.' Later the Ottercliff Naval Station reported this intercepted message from the *Bancroft* to 'R.34':—'We see you are heading for Chatham, course 230 deg., speed 23 knots. Keep me informed your movement.' Finally at 2 a.m. came this message from the airship:—'Will land Montauk. Will report later.' The message was received with great relief. The spot at Chatham on Cape Cod, near Boston, where Major Scott had thought of landing, though a dirigible base, is not fitted for large ships, and it was feared that it might be impossible to berth her there. Had Maj. Scott put in there, he would have done so with the intention, according to a message received from him, of fuelling, and proceeding to Mineola, possibly to-day.

A Dangerous Landing Place

"The decision to go on to Montauk Point, on the eastern end of Long Island, was due to messages from Mineola to Major Scott pointing out the danger of Chatham and the comparative advantages of Montauk, where there are ample supplies of hydrogen and fuel, a good landing place, and plenty of vessels about in case of an enforced descent into the sea. It was also accessible for the men who had been trained to handle 'R.34' on landing—an important consideration. Indeed, news that Chatham or Boston might be the landing place had caused something like a panic among those responsible for the safe berthing of the ship, some of whom set out, on hearing the news, to rush as fast as possible to Boston.

"It was with the idea that the landing would be at Montauk whither a number of men were hurriedly despatched to

manage the landing, that such of the anxious watchers as slept last night went to bed. They were relieved, but not happy, for great uncertainty could not but surround a landing at an unexpected place. It is clear that 'R.34' must have had a very bad time of it on the last lap. She had two days and nights of dodging storms and fogs over one of the most inhospitable of seas. She was running short of hydrogen and of fuel. Her long-distance wireless refused to work at the end. Nevertheless, as her messages show, she was determined to stick it out to the end."

Messages of Congratulation

His Majesty sent the following message of congratulation to Officer Commanding "R.34" through General Sir F. H. Sykes:—

"I am commanded by His Majesty to transmit the following message to you:

"Heartiest congratulations to yourself and crew of 'R.34' on your splendid achievement, and best wishes for a safe return. Your flight marks the beginning of an era in which the English-speaking peoples, already drawn together in war, will be even more closely united in peace."

The following messages of congratulation were also sent:—

From Mr. Winston Churchill.—"All congratulations to Major Scott and his gallant companions on their conquest of the Atlantic. Henceforward East Fortune and Long Island are signal names in the history of flying. May the return be as prosperous as the outward journey."

From General Sykes, Controller-General of Civil Aviation.—"Heartiest congratulations on your successful voyage and sincere wishes for safe return. I sincerely hope the flight will be the forerunner of Transatlantic commercial traffic by air."

From the Air Council.—"The Air Council desire that their appreciation be conveyed to Brig.-Gen. Maitland, Maj. Scott and officers and crew of "R.34" of the manner in which they successfully crossed the Atlantic and dealt with subsequent difficulties."

From the Air Staff.—"Well done. We fully appreciate your difficulties since the crossing to Newfoundland was actually completed. Further congratulations on establishing a world record for time in the air.—GROVES, Brig.-Gen., Deputy-Chief Air Staff."

From the Chief of the Air Staff.—"In the name of all ranks of the R.A.F. I desire to express our appreciation of your feat. Airmen can realise your airmanship, navigation, and endurance.—TRENCHARD, Maj.-Gen., Chief of Air Staff."

The Return Journey

At the time of writing no definite decision has, apparently, been made regarding the time of the start of the return journey, which was at one time thought to be taking place during Tuesday last (July 8), but July 9 or 10 is probably nearer the date. However, according to reports from Mineola the airship nearly came to grief during the early morning of July 7, when, it is reported, owing to the expansion of the gas the airship became almost unmanageable, and at times lifted the men of the landing party off their feet. Finally the strain grew so great that the mooring ring in the nose of the airship broke, and the nose shot up into the air, the airship being now anchored by the aft gondola only. While the airship was in this precarious position some members of the crew succeeded in climbing into the airship through the aft gondola, making their way into the nose whence a rope was lowered and the landing party succeeded in bringing the airship into a horizontal position once more. When the mooring ring tore away some slight damage was done to the nose of "R.34" but this is not thought to be serious, as the ballonets are not damaged. It will, however, take some little time to make the necessary repairs, although naturally the commander of the airship is anxious to get away as soon as possible, which will probably be during Wednesday.

The Lessons Learned from the Transatlantic Voyage of "R.34"

In our Editorial comment we are referring to the lessons that are to be learned from this great trip of the "R.34," and the effect which it will have on the future development of commercial airship aviation. Suffice it to publish here some of the deductions that have been made by members of the crew of "R.34" and by others equally qualified to judge. Maj. Pritchard, who by the way, arrived some little time ahead of his fellow travellers by the expedient of dropping in a parachute in order to be on the spot to superintend the landing operations, expressed the following views to a correspondent of *The Times*:—

"Personally, all this sort of howl and congratulations seem to me out of place. This journey in itself is not so wonderful. The thing to praise is the past work which has made it possible."

He confessed a moment later that he and his brother officers were all so tremendously absorbed in technical questions during the journey and so keenly interested in their solution, that they had no interest left for the purely human aspect of their adventures. He continued:—

"What I want to emphasise first is that airships are supreme for long-distance travel by air. Aeroplanes are for quick, short flights, and there is no competition between the two, any more than there is between an Atlantic liner and a cross-Channel boat. If you want a really reliable long-range air vessel it must be a rigid ship. In the flight we have just completed the flight was tremendously longer than any ever attempted before by a heavier-than-air machine. It must be remembered that we took only 59 hours to do the purely Atlantic part of the trip, though the whole flight here has occupied 108 hours. Of our difficulties I will speak to you in a minute, but first I want to point out that our return journey will be infinitely easier. By air, for the purposes of airship travel, America, figuratively speaking, is a thousand miles nearer England than England is to America. Winds are invariably against the traveller to America, and in his favour going from America."

A Reuter message says that shortly after the landing the officers and crew of "R.34" had luncheon with American Army and Navy officers, when Gen. Maitland predicted that within a few years airships five times as big as the "R.34" with a lifting capacity of 200 tons, would not only cross the Atlantic regularly but would establish trade routes in the Mediterranean and in the Pacific.

Maj. Cooke, the navigating officer, said: "The weather situation in the Atlantic must be investigated thoroughly before trans-oceanic travel by air between England and America can be made safe and practicable. With the limited information we now have regarding the weather conditions, Transatlantic travel is highly dangerous. I consider it almost a miracle that we completed the trip successfully after what we went through last night."

Lieut.-Com. Lansdowne, U.S.N., observer on board the "R.34," whose story of the trip is printed in the *Daily Telegraph*, makes the following statement:—

"I thoroughly believe that the future of the airship for commercial aviation has been established. I make this assertion from my personal observation aboard the 'R.34,' and I earnestly hope that America in this matter will keep

pace with our progressive cousins across the sea. Such co-ordination, I firmly believe, will augment, if that is possible, the close relationship that binds the two great English-speaking peoples."

ITEMS

The Constructor's Congratulations

On behalf of himself and staff at Inchinnan, where "R.34" was built, Sir William Beardmore has wired congratulations to Maj. Scott and crew of "R.34."

Girders of a larger airship, the "R.36," are now being placed in position.

A Stowaway on Board the "R.34"

The first stowaway of the air was found on board "R.34" when she was some six hours out. He is a youth named Ballantine, scarcely 20 years of age, who had formed one of the crew, but who with others had to be left behind at the last moment in order to keep the load down. This caused him great disappointment, and he resolved to make the trip as a stowaway. He had intended to remain in hiding during the whole trip, but this he was unable to do on account of illness. Incidentally Ballantine was the only man on board who suffered from any illness during the voyage. When he was discovered he was feverish and was given medical attention. It took about two days to pull him around, and he was then made to work his way across. He will not be allowed to make the return journey on board "R.34," but will be sent home by steamer. Although as a matter of form he will have to be court-martialled it is not thought that his punishment will be very severe.

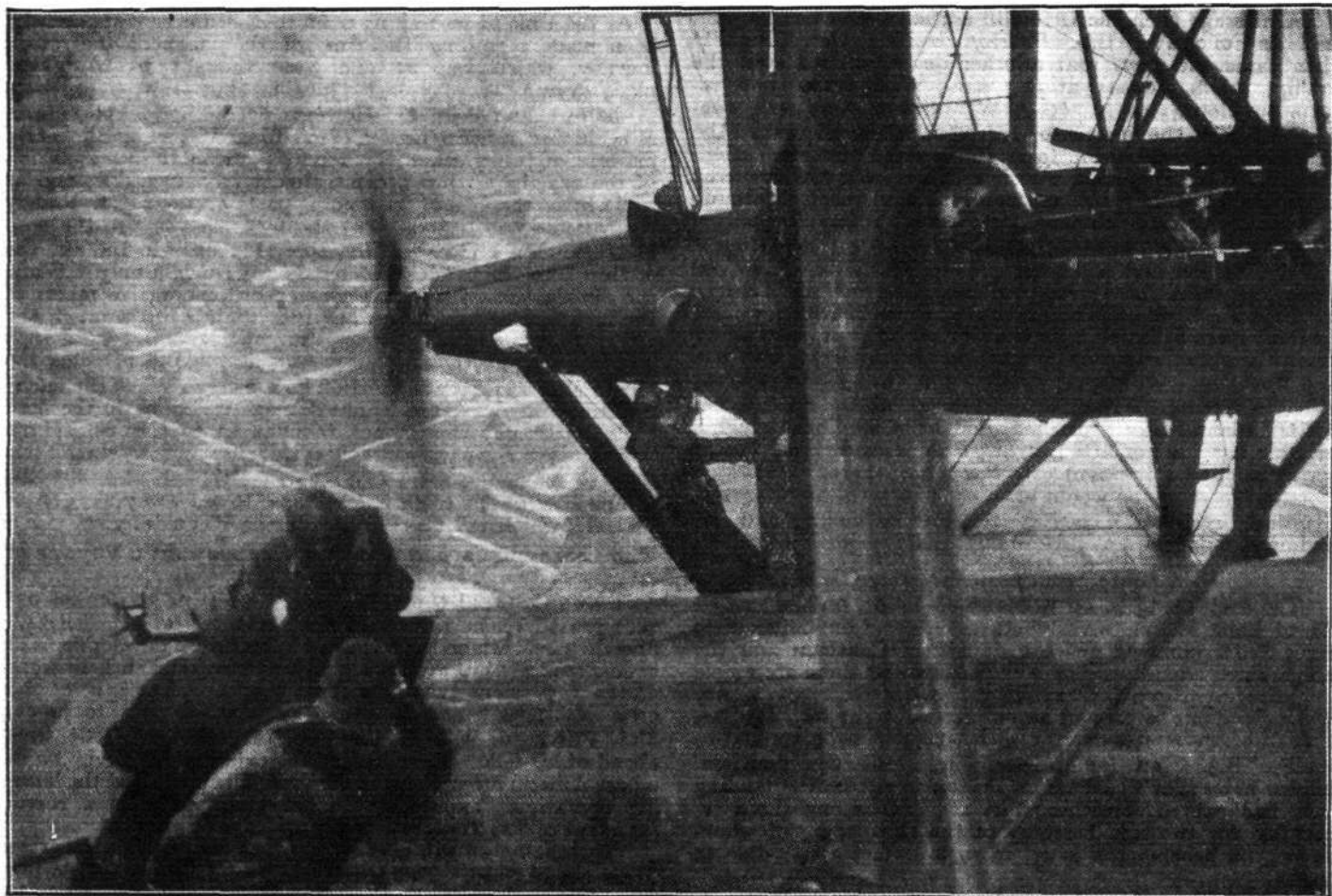
Thanks to U.S. Navy

The following message has been sent to the British Air Attache at Washington:—

"Please convey the following to United States Naval authorities:—The Air Council desire to express their most cordial and grateful thanks for the co-operation and assistance that the United States Navy rendered to H.M. Airship 'R.34.'"

To Follow the Return Journey

The progress of R.34 during the return trip from America to England will be recorded on a large chart of the Atlantic exhibited outside Marconi House, Strand. A model airship will indicate R.34's position according to the latest wireless messages.



ON BOARD A GERMAN GIANT AEROPLANE.—The mechanic is repairing an oil pump defect during flight. The photograph was taken from the port engine nacelle.

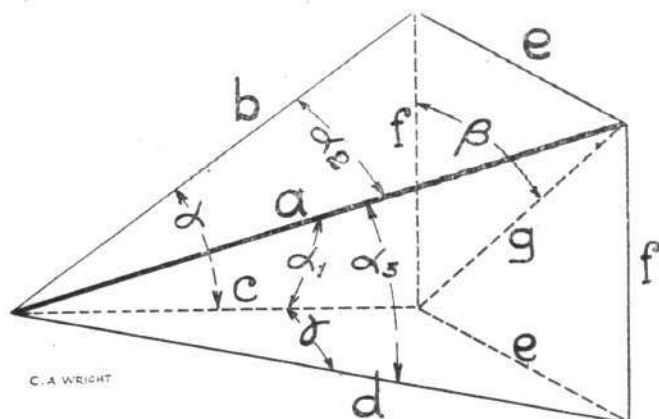
INCLINED STRUTS AND WIRES

BY C. A. WRIGHT

PROBABLY no other machine involves so many "angle" problems as does the aeroplane.

So long as the strut or wire is inclined to any pair of the three co-ordinate planes, the matter is fairly simple.

When, however, it is inclined to all three planes the following trigonometrical relations and formulae will be found useful when determining auxiliary angles and length of the strut or wire.



Inclined strut or wire line "a."

Angle contained by lines $be = 90^\circ$

" " " $fc = 90^\circ$

" " " $fd = 90^\circ$

" " " $fe = 90^\circ$

" " " $gc = 90^\circ$

$$\sin a = \frac{\tan a_2}{\tan \beta} \quad (1)$$

$$\sin a_1 = \frac{\sin a_2}{\sin \beta} \quad (2)$$

$$\sin a_2 = \sin a_1 \sin \beta = \cos a_1 \tan \gamma = \sin a_3 \tan \beta \quad (3)$$

$$\sin a_3 = \sin a_1 \cos \beta = \tan a \cos a_1 = \frac{\sin a_2}{\sqrt{\frac{1}{\sin^2 a} + \cos^2 \beta} - 1} = \frac{\sin a_2}{\tan \beta} \quad (4)$$

$$\sin \beta = \frac{\tan \gamma}{\tan a_1} = \frac{\sin a_2}{\sin a_1} \quad (5)$$

$$\sin \gamma = \frac{\sin a_2}{\cos a_1} = \tan \beta \tan a_1 \quad (6)$$

$$\cos a = \frac{\tan a_2}{\tan \gamma} \quad (7)$$

$$\cos a_1 = \frac{\sin a_1 \cos \beta}{\tan a} = \frac{\sin a_1 \sin \beta}{\tan \gamma} = \cos a \cos a_2 = \cos \gamma \cos a_3 \quad (8)$$

$$\cos a_2 = \frac{\sin a_2}{\sin a} = \frac{\sin a_1 \cos \beta}{\sin a} = \frac{\sin a_3}{\sin a} \quad (9)$$

$$\cos a_3 = \frac{\cos a_1}{\cos \gamma} = \frac{\sin a_1 \sin \beta}{\cos \gamma} = \frac{\sin a_2}{\sin \gamma} = \cos \gamma = \sqrt{1 + \frac{\tan^2 a}{\tan^2 \beta}} \quad (10)$$

$$\cos \beta = \frac{\tan a_1}{\tan a} = \frac{\sin a_1}{\sin a} \quad (11)$$

$$\cos \gamma = \frac{\cos a_1}{\cos a_2} = \frac{\tan a_1}{\tan a} = \sqrt{1 + \tan^2 a \tan^2 \beta} \quad (12)$$

$$\tan a = \frac{\tan \gamma}{\tan \beta} = \tan a_1 \cos \beta \quad (13)$$

$$\tan a_1 = \frac{\tan \gamma}{\sin \beta} = \cos \beta \quad (14)$$

$$\tan a_2 = \sin a \tan \beta = \cos a \tan \gamma \quad (15)$$

$$\tan a_3 = \tan a \cos \gamma = \tan \beta = \sqrt{1 + \tan^2 a \tan^2 \beta} \quad (16)$$

$$\tan \beta = \frac{\tan \gamma}{\tan a} = \tan a_1 \cos \beta = \tan a \quad (17)$$

$$\tan \gamma = \tan a \tan \beta = \tan a_1 \sin \beta \quad (18)$$

$$= a \sqrt{c^2 + e^2 + f^2} \quad (19)$$

$$= c \sqrt{1 + \frac{\tan^2 a}{\cos^2 \beta}} = c \sqrt{1 + \tan^2 a + \tan^2 \gamma} \quad (20)$$

$$= e \sqrt{1 + \frac{1}{\sin^2 a \tan^2 \beta}} = e \sqrt{1 + \frac{1}{\tan^2 \beta} + \frac{1}{\tan^2 \gamma}} \quad (21)$$

$$= f \sqrt{1 + \frac{1}{\tan^2 a} + \tan^2 \beta} \quad (22)$$

R.33 and R.34 to Help Victory Loan

THE Air Ministry have made arrangements with Victory Loan Headquarters that anyone who this week purchases £5,000 or over of the Victory Loan shall have a free flight. Application should be made to the Victory Loan Headquarters, Salisbury Square, and, if the flights cannot be arranged this week, they will be given after the Loan Campaign is over. The applications must, however, be made this week. Also, the Air Ministry state that they hope they will be able to arrange for the R.33 to meet the R.34 on her return from America, so that London will have the opportunity of seeing the two sister airships fly over the City.

Aeroplanes and Empire Linking-Up

UNDER the auspices of the Imperial Air Fleet Committee, Lord Norris, ex-Premier of Newfoundland, on Monday addressed a meeting at Birmingham, when the Lord Mayor of that City, Sir Davis Brooks, presided. The Chairman explained that it was desired to stimulate interest in the scheme for raising funds to buy aeroplanes to be given to the Colonies. It was proposed to give the Birmingham aeroplane to South Africa, and already £1,700 towards the total cost of £2,200 had been promised.

Lord Norris said that by giving aeroplanes they were promoting the patriotic sentiments which were necessary to keep the Empire together. We were at the beginning of a new chapter in Imperial history, and it would be well if captains of industry asked themselves how we stood, now that the War was over. In his judgment there never was a time when more careful piloting was required. An Imperial Air Fleet would help to link up the far-flung portions of the Empire and produce some tangible illustrations of our common brotherhood.

Cairo-Karachi Air Mail

A DEFINITE project for an India-Egypt aerial mail between Cairo and Karachi, via Baghdad, is under consideration by the Government.

And Between India and Australia

GENERAL BORTON, in an interview at Calcutta, is very enthusiastic over the prospects of the establishment of an aerial post in the future.

General Borton, who about the middle of June returned to Calcutta after a three months' surveying tour, undertaken at the request of the British Air Ministry, to discover the possibilities of establishing an aerial postal service between India and Australia, points out strongly, however, that much remains to be done as regards aerodromes, hangars, meteorological stations, and navigation lighting. He does not think weather conditions, even during the monsoon, will prevent flying, but there is much that can only be learnt by practical flying experience.

An Amballa to Simla Flight

IN our issue of June 26, in connection with the above flight, Maj. H. A. Tweedie, A.F.C., was made by a reporter's error to belong to the "Aus. F.C." Mrs. Alec Tweedie points out that Maj. Tweedie, although he has been awarded the A.F.C., "is not an Australian and was born in London. He was educated at Charterhouse and Trinity College, Cambridge. "It was the first flight," Mrs. Tweedie continues, "across the Himalayas, and he landed on a very small piece of ground, nearly 8,000 ft. above sea level, in the cup of the mountains at Simla. The Indian papers are very enthusiastic." And well they may be. Our congratulations to Maj. Tweedie and to Mrs. Alec Tweedie.

Our Funny Language

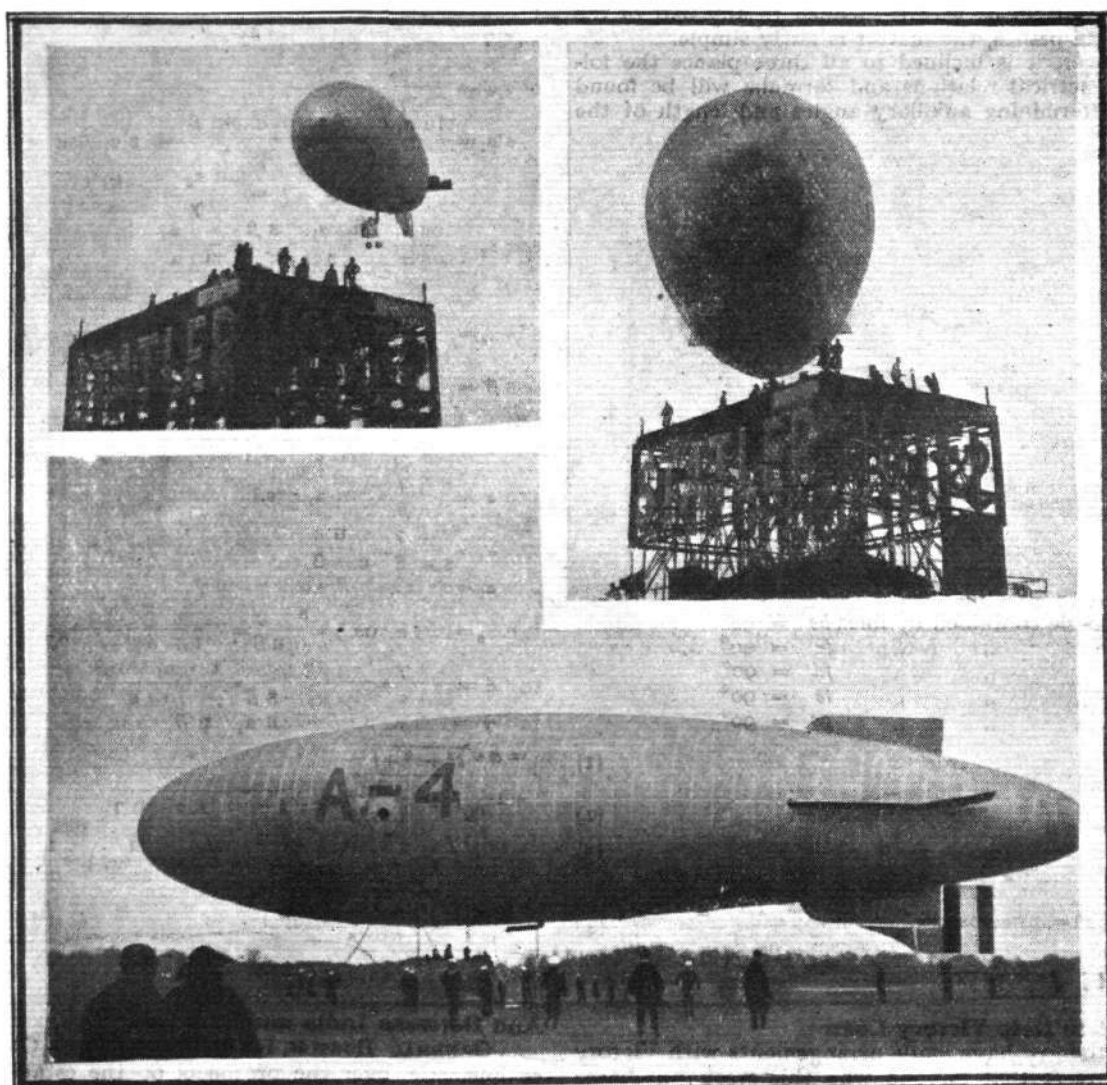
Ask your friends the following questions: Did you ever see a stone step? or a pea-nut stand? or a sardine box? or a sausage roll? or an apple turnover? or a hair die? or a day pass by? or a horse fly? or a snake dance? or a ship spar? or a sugar bowl? or a vine run? or a cracker box? or a bed spring? or a rail fence? or a ginger snap? or a skate fish? or a bottle fly? or a man catch his breath? or a bed tick? or a clock run? or ink stand? or a man pull up a river? or a bell push? or a lady's ear ring? or the coal scuttle? or a salad dressing?—*The Joystick.*

ROOF-TOP LANDING STAGES FOR AIRSHIPS

AN interesting, and not altogether unimportant, experiment was carried out in America last May, when, on the occasion of the meeting and dinner of the Cleveland section of the Society of Automotive Engineers, one of the U.S. Army

airship returned to the latter place immediately after landing its passengers.

The pilot of the A-4, James F. Shade, was accorded well-deserved applause on his skilful piloting, for the difficulties



ROOF-TOP LANDING STAGES FOR AIRSHIPS.—A successful experiment recently carried out in America. Top left hand corner, the U.S. Army Airship A-4 approaching the landing stage erected on the roof of the Statler Hotel, Cleveland, Ohio. Right, the airship comes "alongtop" and lands two passengers. Bottom, the U.S. Army "Blimp" A-4.

"Blimps"—the A-4, built by the Goodyear Tyre and Rubber Company—successfully came "alongtop" a landing stage erected on the roof of the Statler Hotel at Cleveland, Ohio (where the above meeting took place), and landed two passengers from Akron, 50 miles away. The

to overcome in a feat of this description are many, and not at once apparent. The performance was not staged as a "stunt," but was to show the progress that has been made in the development of dirigibles and the skill with which difficult landings can be made by experienced pilots.

The Airship Club Dinner

OWING to the Peace celebrations taking place on July 19 it has been found necessary to postpone the Airship Officers' Club dinner at the Connaught Rooms until Saturday, July 26. Particulars for those interested, as stated last week, can be obtained from the Hon. Secretary of the Club, 4, Dean Stanley Street, S.W. 1. With the splendid trip of R 34 in mind, the Club should have a very "full house" upon the occasion.

43 Squadron, R.A.F.

AN officers' dinner will be held for all members by special request of Billy Dore and Baron Miles at Criterion Restaurant, Piccadilly, 7.30 p.m. Friday, July 18. Ticket 50s. each. Those interested should communicate with Capt. John Trollope, Banstead, Surrey, enclosing cheque, before 15th instant. Beds arranged for country members.

A Flying Club in the North Proposed

A PROPOSAL is now on foot to organise a flying club at Birkdale and to take advantage of the hard and level sands there for aerodrome purposes. We understand that it is possible to land there at practically any time, and at ordinary high tide there is ample room. Messrs. A. V. Roe and Com-

pany have been using the sands for some time, and have found them a satisfactory aerodrome. The objects of the proposed club would be:—

- (1) To enable ex-Service pilots to continue their flying.
- (2) To popularise flying as a pastime.
- (3) To organise flying competitions.
- (4) To encourage generally the use of the aeroplane as a means of transport.

Any of our readers who may be interested in the proposed scheme are invited to communicate with Major W. G. McMinnies (late R.A.F.), 18, Gloucester Road, Birkdale, Lancs.

Punch's Summer Number.

GOOD AS *Punch* always was, before the War, it was better during the War. That it will reach yet greater heights after the War is reasonably guaranteed by the 1919 Summer Number, just out, which largely contains matter reflecting the effects worked on the minds of all sorts and conditions of men by the little bit of autography practised at Versailles on Saturday, June 28 last. A better shilling's-worth it would be difficult to select.

DESIGN AND CONSTRUCTION OF FLYING BOATS

By Captain DAVID NICOLSON

(Concluded from page 876.)

Construction. Types P. and N.

GENERALLY the hull construction of the P. and N. types consists of a number of stringers disposed, as in Fig. 10, around the more or less circular section of the boat.

Stringers.—The longitudinal stringers A, Fig. 10, are of spruce $2\frac{1}{4}$ ins. moulded amidships tapering to 1 in. forward and $\frac{3}{4}$ in. aft, all sided $\frac{5}{16}$ in. At the top and bottom of each stringer are glued a pair of fillets, one on either side of each stringer, to take the fastenings through the floors and the

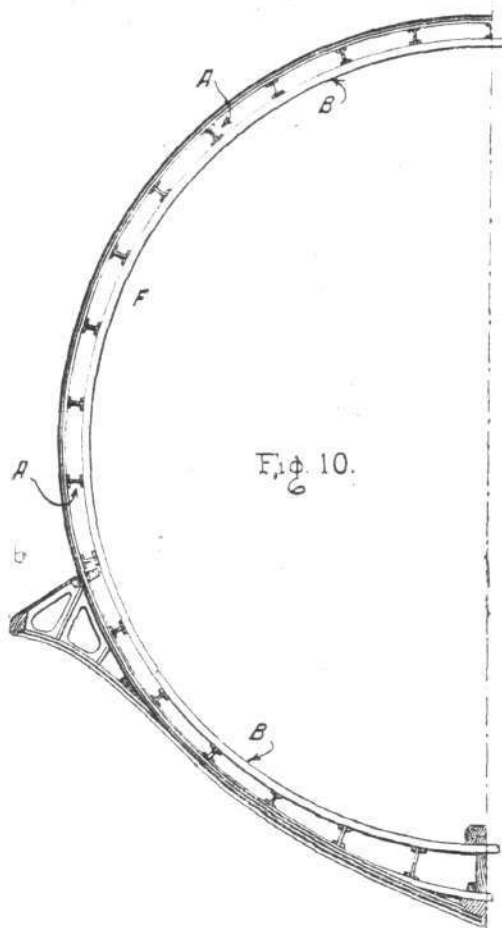


Fig. 10.

skin. The writer suggests that I-shaped stringers should be worked out of the solid, forming a lighter and stronger girder.

The stringers are secured to the interior bent-wood hoops B of rock elm, extending in planes transversely to the longitudinal axis throughout the length of the boat, Figs. 10 and 11. The hoops are doubled in wake of the wing-root spars, and alternately scarphed at the top and bottom. Externally around the longitudinal stringers are a number of bent-wood ribs or timbers of rock elm moulded $\frac{5}{16}$ in., sided $\frac{3}{8}$ in., and

elm moulded $1\frac{3}{4}$ ins. and sided 3 ins. at amidships and tapered at the ends. It is in one piece, and runs up to form the stem, and is a great improvement on the construction adopted in the F. type.

Keelson.—The keelson is of spruce, 5 ins. moulded at amidships and tapered to stem, and to 2 ins. at the after end. It

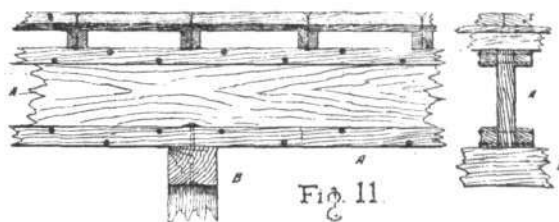


Fig. 11.

is sided $\frac{5}{8}$ in. parallel throughout. The bottom is carefully joggled over the floors, and glued and secured to the keelson by two spruce fillets glued and through fastened to the keelson, keel, and floors. The top side of the keelson is rabbeted into the under side of a top member or flange, which is secured by glue and screws. This top member or flange is of spruce moulded $\frac{7}{8}$ in. at the centre and tapering to $\frac{3}{4}$ in., sided $2\frac{1}{2}$ ins. at the centre, tapering to stem forward and to $1\frac{1}{4}$ ins. aft; the keel, keelson, and top member forms a very strong I girder.

The sternpost is of mahogany 3 ins. moulded and sided, and extends to 1 ft. above the hull. Saddle straps of elm are fitted, as shown on Fig. 11; those at the main spars and tail-plane struts are in one piece running round the boat with their ends fastened to the keel, as in the case of ordinary timbers, and of the same thickness. In addition, doublings of English elm are fitted at the wing-root stay plates at the front and rear spars; these are clearly seen in Fig. 12.

These doublings are carried in a fore and aft direction for a length of 30 ins., and are carefully joggled over the timbers and floors. The planking of Honduras mahogany is fitted in narrow widths with close seams. The inner skin $\frac{3}{32}$ in. thick being laid diagonally, while the outer skin, $\frac{5}{16}$ in. thick, of the same material, is laid fore and aft.

Varnished nainsook is laid between the skins; this not only makes a watertight job, but adds to the strength of the stem chine. The inner diagonal skin is held in position with copper pins, the outer being through fastened to the timbers with copper nails, the ends of which are turned on the face of the timbers.

Outside the main structure already described, a double-bottom or water-planing surface is fitted, and known as the step. The water-planes are framed up forward of the main step with three-ply birch and small stiffeners, the frames being spaced 18 ins. apart, and secured to the inner hull planing-bottom with spruce fillets.

Chine.—The chine of rock elm is in one piece, and tapered from $1\frac{1}{2}$ ins. by $1\frac{1}{4}$ ins. at the front step to $1\frac{1}{4}$ ins. by 1 in. at the stem. The stringers are of spruce, all in one piece fore and aft, fitted through the three-ply frames, which are fixed to the stringers by small fillets. The timbers of rock

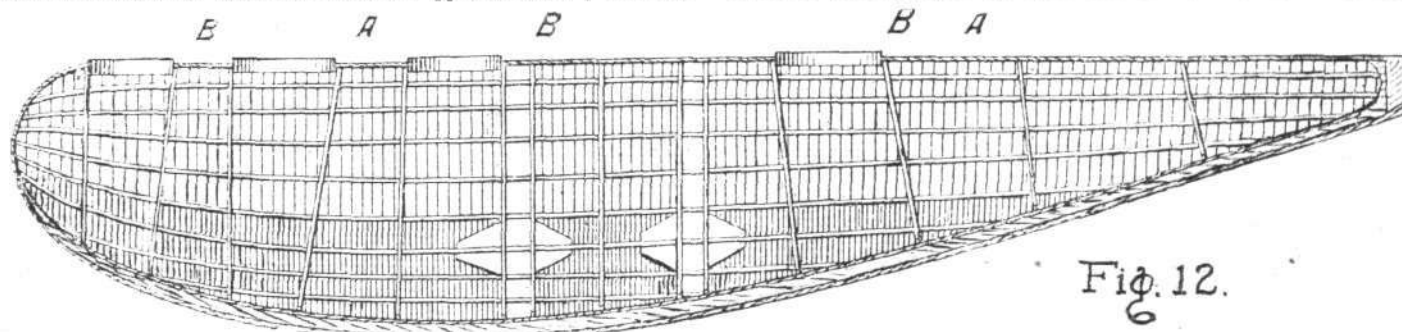


Fig. 12.

spaced 2 ins. apart, except at the bow, where they are fitted as cant timbers and spaced $2\frac{1}{2}$ ins. apart. All timbers are in one piece, bent right round the hull with the ends at the keel, into which they are joggled and glued to the stringers.

Floor-timbers.—The bent floor-timbers are of rock elm $\frac{5}{8}$ in. moulded, sided $\frac{3}{8}$ in. at the centre of the keel, and tapered to $\frac{1}{2}$ in. moulded and $\frac{3}{8}$ in. sided at the ends, all embracing one-quarter of the hull, thus ensuring perfect transverse continuity of strength in the timbers. The keel is of rock

elm of the same size and spacing as in the main hull, with the ends joggled into the chines, are tapered to fit the hull; they are secured to the face of the stringers with glue and light copper pins. The bottom is planked with a double skin of mahogany with varnished fabric between, similar to the main hull.

Fin top.—The fin top is framed with rock elm timbers spaced 2 ins. apart, the ends being joggled into the chines and into a fillet of rock elm. The whole is planked in a similar manner

to the inner hull, carefully fitted to the chine and hull-fillet rabbets, and closely fastened with screws. Rubbing plates of $\frac{1}{8}$ -in. brass, bent to the shape of the bottom, are fitted along the keel, and the chines are also protected by brass strips fastened to the sides and bottom, with the fore ends let in flush and secured by screws.

The bulkheads when fitted are of waterproof canvas fixed to hoops, the spaces between the hoops and skin being filled in with compressed cork to make a thoroughly watertight job. This part of the structure is elastic, and can be considerably distorted without damage, forming a natural buffer to withstand sudden local shocks or bending moments on the hull structure. A strong point in favour of the small transverse framed hull is its resiliency, as it does not depend for its efficiency upon the rigidity of the parts comprising it.

The following are a few of the advantages of the P. and N. type of hull over the F. type:—

(a) A saving of 29 per cent. in bare hull weight in P.5 over the latest hulls of the F.5 class, which are of the same length and power.

(b) An increase in torsional stiffness of the after part and probably greater strength generally. This was proved by testing one of the earliest types to partial destruction at the R.A.E., Farnborough, to ascertain the bending moment when supported at the ends, and the effect of crushing by loading the bottom up to 17 lbs. per square inch of its surface.

(c) The cost of production compares favourably with the F. type. The man-power hours on the 64-ft. hull is 7,500 or 5.37 per square foot of surface; while the time required for completion is 14 weeks, the approximate cost being £1 per lb. weight, including stay-tube plates and steel fittings.

(d) This system ensures extreme accuracy in the estimating of weights and the centre of gravity, e.g., the smallest boat had an estimated weight of 216 lbs. Two hulls built by different firms only varied by $\frac{1}{2}$ lb. Three hulls of an estimated weight of 430 lbs. actually weighed 436, 437, and 440 lbs. respectively, and were built by three different firms. The greatest variation in position of centre of gravity was $\frac{1}{4}$ in. from that calculated. The largest yet built, N.4, is 64 ft. in length, and her estimated weight was 2,970 lbs.; the actual weight being 2,982 lbs., an error of 12 lbs., or less than $\frac{1}{2}$ per cent. The position of the centre of gravity in this case was exactly as designed.

Important Features.

In a flying boat it is necessary for efficiency that it should possess:—

(a) A minimum weight of hull consistent with strength.

(b) Seaworthiness.

(c) A minimum hull resistance.

Military.—A capacity for carrying guns having an all-round fire, and for dropping heavy bombs.

Commercial.—Large passenger and mail-carrying capacity.

(a) The military flying boat, not being built under the registration societies' rules, has no unit to limit the reduction in weight, therefore every action is taken to keep the scantlings and fittings very light, so that the boat might carry as much petrol as possible for long-range work, and a large armament. To reduce the weight from the original design was rather a difficult proposition, as some pilots and equipment officers made continual demands for additions such as wireless apparatus, signalling lamps, life-saving apparatus, boat hooks, sea anchor, carrier pigeons, etc., which were found necessary under service conditions.

It should always be borne in mind, however, when designing a flying boat, that its operational value depends entirely upon the weight of the machine when it is empty.

(b) Any machine which has to alight on the water, and remain there for any length of time, must be seaworthy. It is here that the flying boat has proved to be a great improvement over the seaplane. It has sometimes happened that a seaplane alighting on rough water has been completely wrecked in a very short time by the force of the waves, while several have been blown over. As seaworthiness depends on the design and construction of the hull, a makeshift between an aeroplane fuselage and a flimsy boat is not altogether desirable.

It is as essential that the hull should be designed by a naval architect and constructed by a shipbuilder as the hull of a 20,000-ton steamer, to enable it to fulfil all the conditions of a trying service. Possibly in the near future these boats will be built to rules evolved by registration societies.

(c) The form of a flying boat is of the greatest importance not only from the point of view of displacement and stability, but from the standpoint of resistance in smooth or disturbed water, or in the air as affecting speed. Many tank experi-

ments have been carried out to find the most suitable form for certain fixed conditions, and following are some of the conclusions arising from these investigations:—

Hollow V sections keep the spray down, cut the water more easily and cleanly, plane better, reduce shock on landing or when ploughing through broken water, and eliminate the necessity for shock absorbers. In some of the latest boats the forward sections show a V or concave curvature, blending sweetly into a convex form, which has been found desirable in order to give the fore part of the boat buoyancy when she first takes the water.

The bottom of the hull forward should be inclined to the axis of the machine, but the inclination must not be so great as to cause planing before the controls become effective, and this is particularly necessary when running before the wind. If planing is too pronounced, the boat rises on the surface with but very little control available to maintain balance, which might prove fatal, and when running before the wind this is more likely to occur, due to the higher water-speed necessary before the machine can take the air.

Aft, the bottom should rise quickly, as this favours a steepening of the planing bow before suction is eliminated, and allows the tail to be well clear when planing begins. This is particularly noticeable in the F.B.A. boats, a French design in which the naval architect boldly swept the after part of the hull upwards in curve form.

The total resistance of the P. and N. type takes precedence over the F. design. The former types are more stream-lined in shape, and their bows are much finer. The excessive round bow of the F. type was adopted to allow the forward gun to be fired over the stem and below the boat; but this shape could be greatly improved and yet attain the former object. It will be seen from the sections, Fig. 13, that the area of the F. type bottom is greater than that of the P. type, consequently surface friction in the latter is much less than in the former; but although this is a disadvantage for the F. boat, it gives a larger water-line area, and should necessity arise for adding extra weights the immersion would be less than in the P. type, which would counterbalance to some extent the disadvantage stated.

As in aeroplanes, the struts and wires are all stream-lined to give the least possible resistance, a feature proved in practice to have a beneficial effect on the maximum speed of the machine.

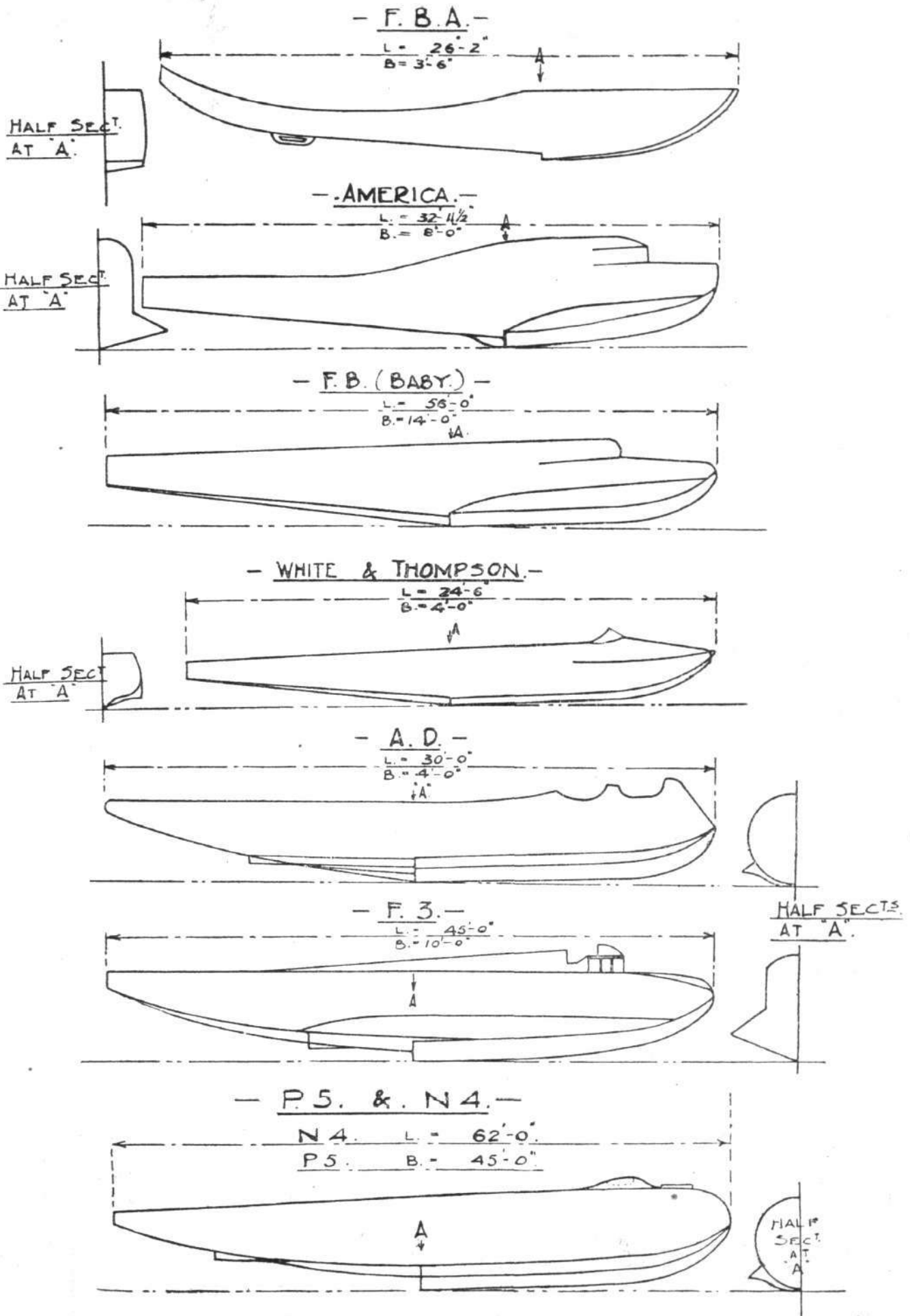
(d) The primary object of the flying boats was to bomb submarines, but they also proved useful for patrol and scouting work. Although they were intended for offensive purposes, they were also prepared for defensive action, and were fitted for carrying machine guns. The position of two of these guns has been previously stated; other two are placed a few feet abaft the rear spar and inside the hull, two larger gun-port openings or doors concealing these weapons from outside view. The latter position is not an ideal one, for they cannot fire below the boat, and their fore and aft radius of fire is limited. It would be an improvement if a watertight hatch were designed in the bottom of the boat, clear of the steps, to enable a gunner, when the boat is in the air, to fire directly downwards into an opponent.

Heavy bombs, in some cases weighing up to 500 lbs., are carried, hanging in a horizontal position at the ends of the wing-root spars; these are released instantaneously by gear controlled from inside the hull.

(e) It may be interesting to review the results attained, and to consider how far these, 12 years after flight became an accomplished fact, are likely to influence future progress. Money, time, and brain power have been spent upon the development of airships, but it is doubtful whether the best of the non-rigid or the rigid types have ever yet justified their cost, and, so far as can at present be seen, no great improvement in this respect is likely to take place. The lift of a lighter than air flying machine can never be greatly increased, even if a gas were discovered weighing zero, as the increased lift obtainable would be practically negligible.

German airships did valuable scouting work for the enemy, but as fighting machines they had a decreasing value. For commercial purposes, it is questionable if the enormous cost of production and maintenance will ever be decreased so that mails and passengers may be carried as cheaply as by other means of transport. Undoubtedly mails will be carried regularly and to a large extent between important seaports in the near future, and there are other ways of profitably employing flying boats—for the purpose of spotting derelicts, fighting forest fires, locating drifting mines, and even for proposed expeditions to the North and South Poles.

The flying boat is probably the only machine by which rapid communication can be opened up in dense forest country intersected by rivers which cannot be navigated owing to



DESIGN AND CONSTRUCTION OF FLYING BOATS

Fig. 13.—The profile and sections of various types of flying boats

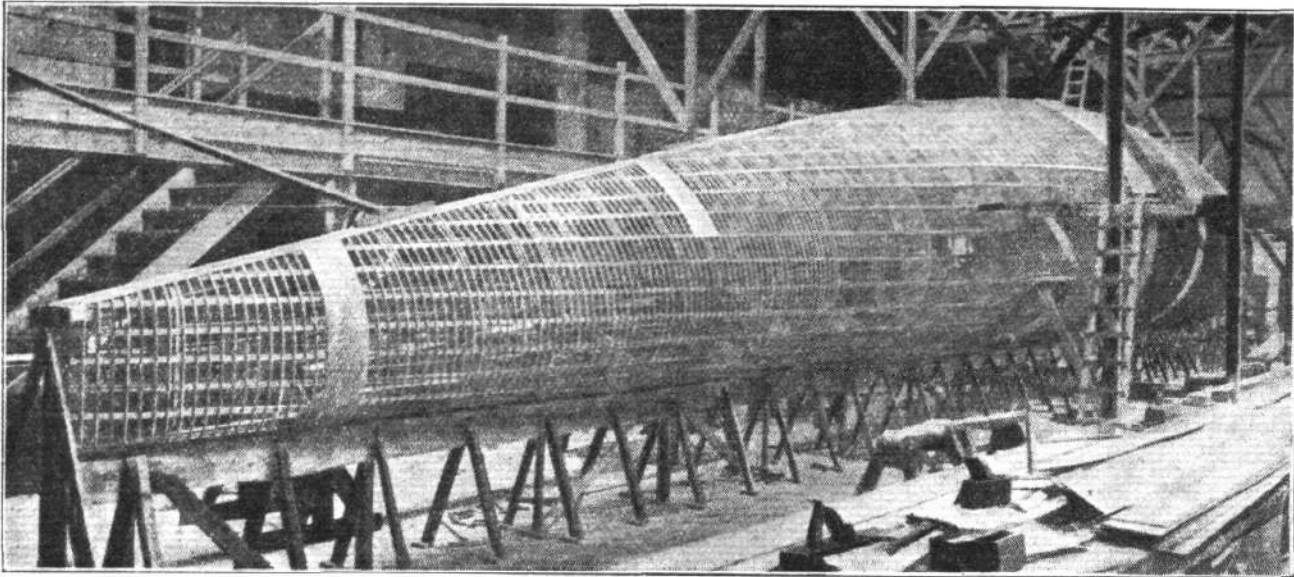


Fig. 14.—Type N 4. Hull in frame.

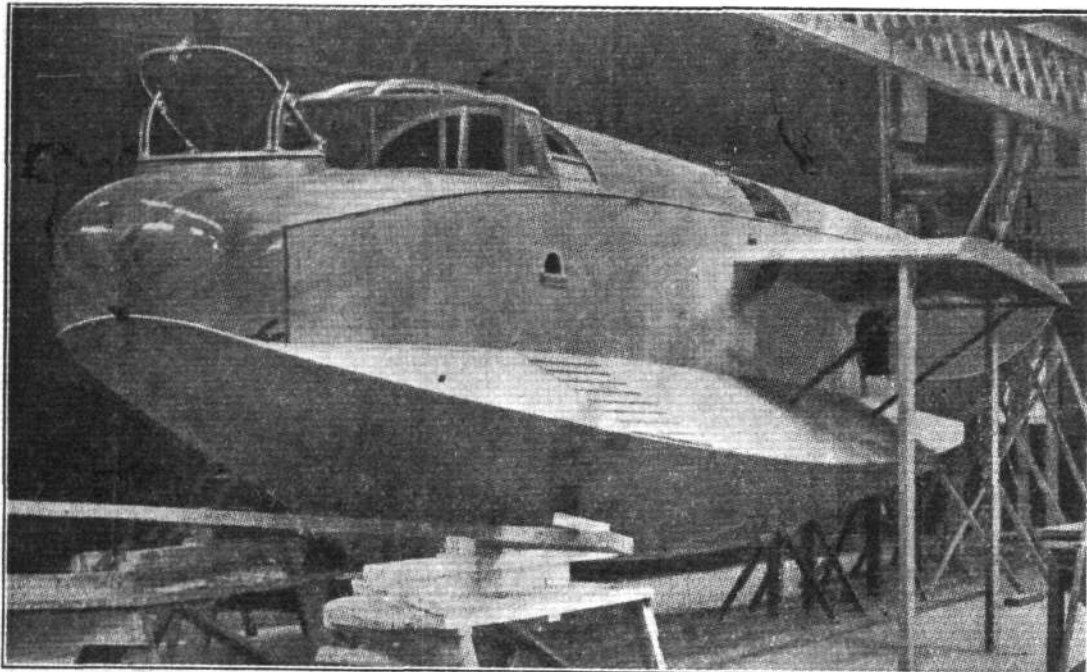


Fig. 15.—Type F/3. Hull nearing completion.

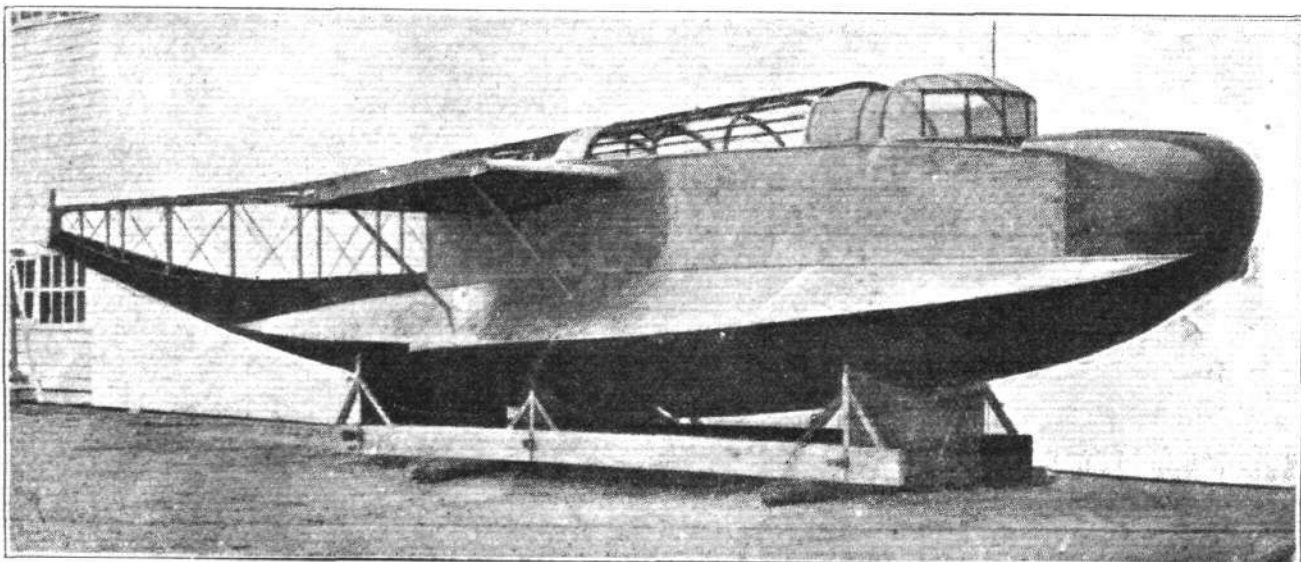


Fig. 16.—Type F. Hull ready for mounting wings and engines.

falls or rapids, for such boats can alight on any moderately sheltered water, and require no special aerodrome.

Following are a few comparative weights relating to the F., P. and N. types already described.

Since the F.5 and P.5 boats are of similar dimensions, and designed to lift the same weight, 12,000 lbs., the lightest hull adds greatly to the operational value of the boat.

The total weight of each of two F.5 boats built by different firms, from official plans, only differed by 4 lbs., the average weight being 2,174 lbs., including wing roots, cloche, seats, and tank seats; deducting 333 lbs. for cloche, seats, etc., leaves a weight for bare hull of 1,841 lbs. The P.5 hull only weighs 1,321 lbs. with the same fittings, therefore the F.5 is nearly 40 per cent. heavier than the P.5.

The rate of production of the various types of boats built in one shipyard show the following figures:—

Ten men built an N.4 hull in from 12 to 13 weeks, three of these being experienced boat-builders, five joiners, and two apprentices. The construction of an F. boat required two skilled boat-builders, and the rest as in the previous case—seven men in all—and they took from 11 to 11½ weeks.

As the N.4 has 1,320 sq. ft. of planking on the main hull, compared with 560 sq. ft. in P.5, which is the same size as F.3, the saving on man-power hours is very much in favour of the larger boat and its particular construction. The increase in area between 1,320 sq. ft. and 560 sq. ft. is roughly 236 per cent.; while the increase of highly-skilled labour is 50 per cent., and 40 per cent. semi-skilled, with an increase

of time of under 10 per cent. Boats of the F. type took 4,830 man-hours for 560 sq. ft.; while on the N.4 there were 7,500 man-hours for 1,320 sq. ft., equal to 8.6 man-hours per square foot on the F. and 5.6 for the N.4. The N.4 shows a saving in man-hours per square foot of surface of over 34 per cent. when compared with the F. type.

The F. boats are propelled by two Eagle Rolls-Royce engines, each developing 345 h.p., giving a speed of 100 m.p.h. The wings have no appreciable dihedral angle or stagger, and are almost square at the wing tips. The span of the top wing is 102 ft. Small wing floats are fitted underneath, and almost at the extremities of the lower planes. The rudder is ear-shaped, the bottom of which is in line with the bottom of the boat.

The N. boat has an overall length of 70 ft., carries a crew of nine, and a thousand gallons of fuel. Her wings are of the variable camber device, and the span is 142 ft. She is fitted with four Rolls-Royce engines, each giving 640 h.p. under dual control, and has a sea-level speed of 110 m.p.h., while her ceiling will be from 17,000 to 18,000 ft.

Fig. 13 illustrates in outline the profile and sections of various types of flying boats.

Figs. 14, 15, and 16 show photographic views of a hull in frame, a hull nearing completion, and a hull ready for mounting the wings and engines respectively.

The following tables show the relationship between the performances of some of the boats:—

P.5.				F.3.				F.5.			
Two Eagle VIII Rolls 352 h.p., 1,800 revs.				Two Eagle VIII Rolls 345 h.p., 1,800 revs.				Two Eagle VIII Rolls 345 h.p., 1,800 revs.			
			lbs.				lbs.				lbs.
Weight empty			7,347	Weight empty			7,958	Weight empty			8,023
Petrol, 100 galls.				Petrol, 100 galls.				Petrol, 80 galls.			
Oil, 20 galls.			915	Oil, 10 galls.			836	Oil, 10 galls.			688
Miscellaneous			138	Miscellaneous			238	Miscellaneous			199
Crew			720	Crew			720	Crew			720
Total weight ..			9,210	Total weight ..			9,752	Total weight ..			9,630
Weight per sq. ft. of surface ..			7.12	Weight per sq. ft. of surface ..			6.82	Weight per sq. ft. of surface ..			6.83
Weight per horse power ..			13.10	Weight per horse power ..			14.13	Weight per horse power ..			13.95
Climb to	Mins.	Secs.		Climb to	Mins.	Secs.		Climb to	Mins.	Secs.	
2,000 ft. ..	2	40		2,000 ft. ..	3	12		2,000 ft. ..	2	45	
5,000 ft. ..	7	55		5,000 ft. ..	9	3		5,000 ft. ..	7	30	
Speed at	Knots.			Speed at	Knots.			Speed at	Knots.		
2,000 ft. ..	91			2,000 ft. ..	81			2,000 ft. ..	88		
5,000 ft. ..	89			5,000 ft. ..	80			5,000 ft. ..	87		

No Service Aircraft for Peace Flights

THE Air Ministry announces, in order to prevent useless applications and to avoid disappointment, that it will not be possible to permit Service aircraft to be lent for the purpose of giving exhibition flights during the Peace and other celebrations.

R.A.F. Dental Surgeons

THE Air Council invites applications from duly qualified men for appointment as commissioned dental officers at a salary of £1 per diem, together with a War bonus of 28s. per week, and certain allowances where quarters are not available. Successful applicants will be required to engage under contract for twelve months, or until their services can be dispensed with, whichever will happen first, and will be granted an outfit allowance of £30. Applications should be made to the Secretary, Medical Department, Air Ministry, London.

Mr. W. M. Hughes on Imperialism

AT the farewell dinner given last week in London to the Australian Prime Minister, before his departure for Australia, Mr. Hughes said we must hope that somehow means would be found whereby the great confederation of free nations calling itself the British Empire would work, live and develop together in the highest interests of civilisation and the welfare of mankind.

Apart from spiritual ties of tradition, race, and common ideals, he added to the two great links—defence and trade—the means of communication. Every step that we took that brought the widely scattered portions of the Empire closer together was a safeguard against disintegration and a greater assurance of unity. The present means of transport and communication, good as they were, fell far short of that which was imperatively necessary. With marine engineering, even as it stood to-day, there was no reason why we should not travel from Fremantle to London by steamship in from 18 to 20 days, by aeroplane or airship in much less. An

Imperial fleet of swift steamships, ploughing and encircling the oceans of the earth, aeroplanes and airships still more swiftly piercing the upper air, were imperatively necessary—and, not less so, a chain of powerful wireless stations supplementing cables and enabling every part of the Empire to be more fully conversant with each other's thoughts and actions.

In the not distant future Sydney and Montreal would speak to London and hear its voice over the great wastes of water. Thus drawn together by an effective Imperial Defence and trade policy, and by improved means of communication, bonds of Empire would be so firmly cemented that neither corroding time nor the rude buffets of adversity would shatter them.

Air Services in the Orient

ACCORDING to a message from Paris, the French Chamber will vote additional credits for the establishment of an Aviation Mission in Turkey, entrusted with the organisation of the following postal lines: Constantinople, Smyrna, Grecian Archipelago; Constantinople, Palestine, Messa, Egypt; Constantinople, Armenia, Caucasus, Persia; Constantinople, Bucharest, South Russia; Constantinople, Salonika, the Balkans. It is stated that these lines will be carried on by the military until French air navigation companies have been floated.

Propellers as Souvenirs

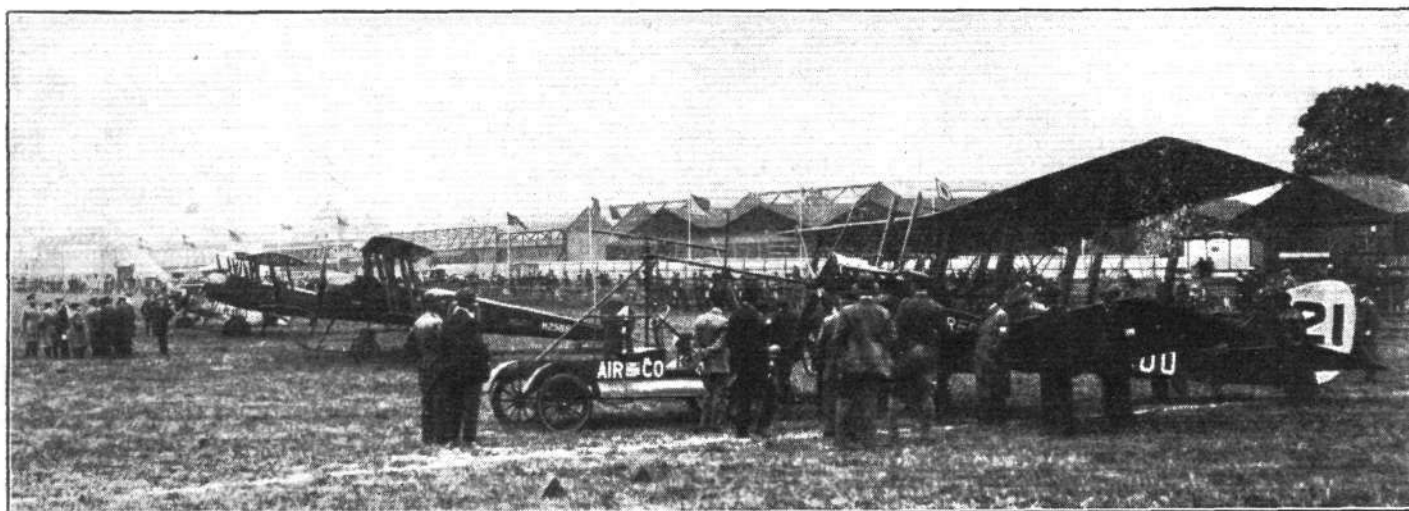
THE Government are offering for sale singly a number of aeroplane propellers at York House, Kingsway. These propellers are made up of the finest walnut and mahogany, and can be used for a variety of purposes, such as hat stands, with a clock or barometer inserted in the boss, and can also be made into picture frames, jewel and clock cases. The four-bladed ones are being sold at 30s. and the two-bladed at 25s. Arrangements for delivery can be made. These propellers are all quite new, the engines for which they were made having become obsolete.

CIVILIAN FLYING

HENDON

BAD weather, and what might have been an extremely bad accident, somewhat marred the proceedings of the Hendon Peace Meeting last Saturday afternoon, when the first racing round the pylons since the War took place. As regards the accident, this, it appears, was very similar to that which occurred to Lieut. De Ville when he flew into a wireless mast. Capt. Chamberlayne had just finished first in the final of the race, and re-ascended in the G.-W. Bantam to do some stunting. For some reason, at present unknown, when flying

were four pilots in the first heat, which was won by Capt. Gathergood, winner of the Aerial Derby, on an Airco VI., with a 90 h.p. R.A.F. engine, who received 19 sec. start from Capt. Chamberlayne, flying a Grahame-White Bantam, with an 80 h.p. Le Rhone engine, who started from scratch and finished second. Heat 2 was won by Maj. R. H. Carr, whose machine was an Avro, with a 110 h.p. Le Rhone engine, with Capt. G. R. Hicks second on the same type of machine. Both started from scratch, and easily outdistanced the third competitor in the heat, Lieut.-Col. G. H. P. Henderson, who



"Flight" Copyright.

RACING AT THE LONDON AERODROME, HENDON: Line-up of the machines before Saturday's race of the day

round No. 3 pylon he appeared to lose control of the machine, which flew straight into one of the iron supports of a hangar.

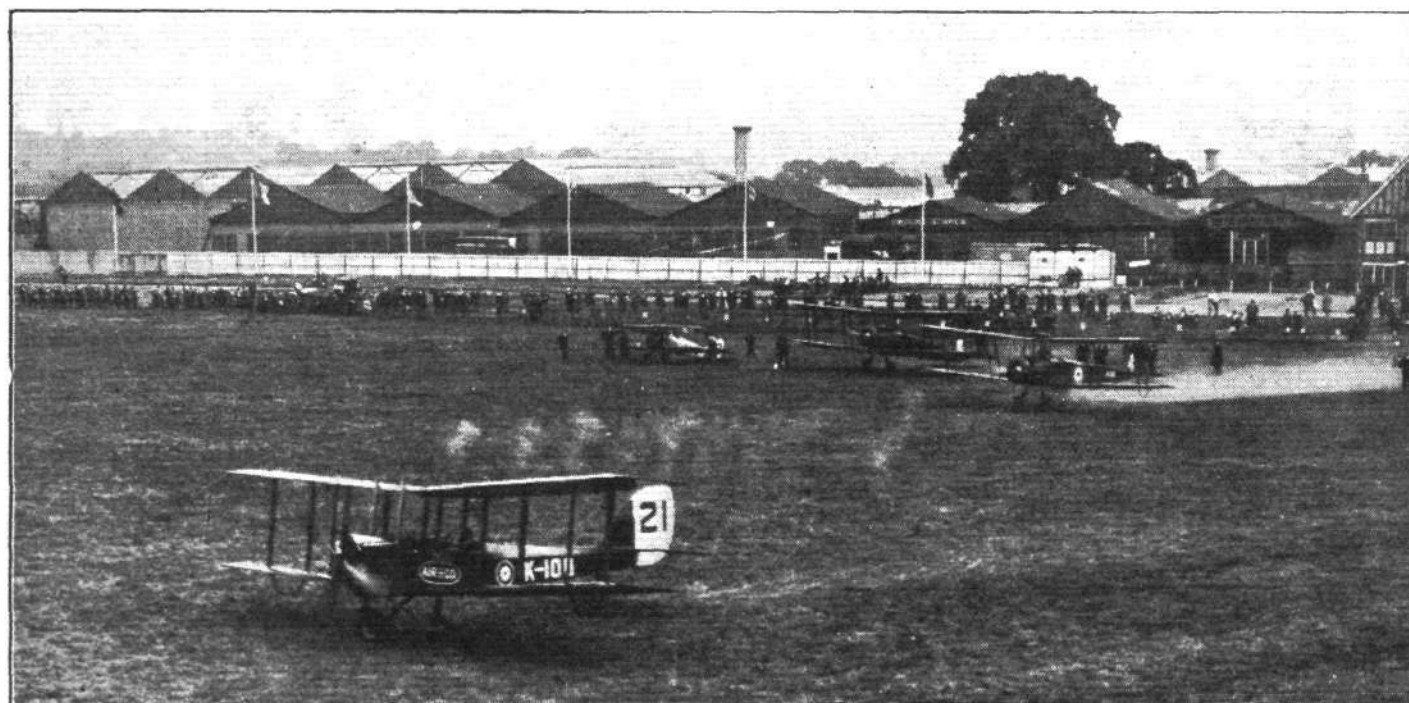
Fortunately, the machine remained "stuck" where it hit, and the pilot managed to extricate himself almost unhurt, though soaked with petrol. It was undoubtedly a miraculous escape, and Capt. Chamberlayne is to be congratulated on being still alive.

There were seven entries for the race, which was flown in two heats of four circuits each, and a finish of six laps. There

received 19 sec. The final being over a longer course necessitated an alteration in the handicap. Capt. Gathergood received 28 sec., Maj. Carr 19 sec., Capt. Hicks 19 sec., and Capt. Chamberlayne scratch. On the completion of the first lap Capt. Gathergood retired, and the final result was: Capt. Chamberlayne, 1; Capt. Hicks, 2; Maj. Carr, 3.

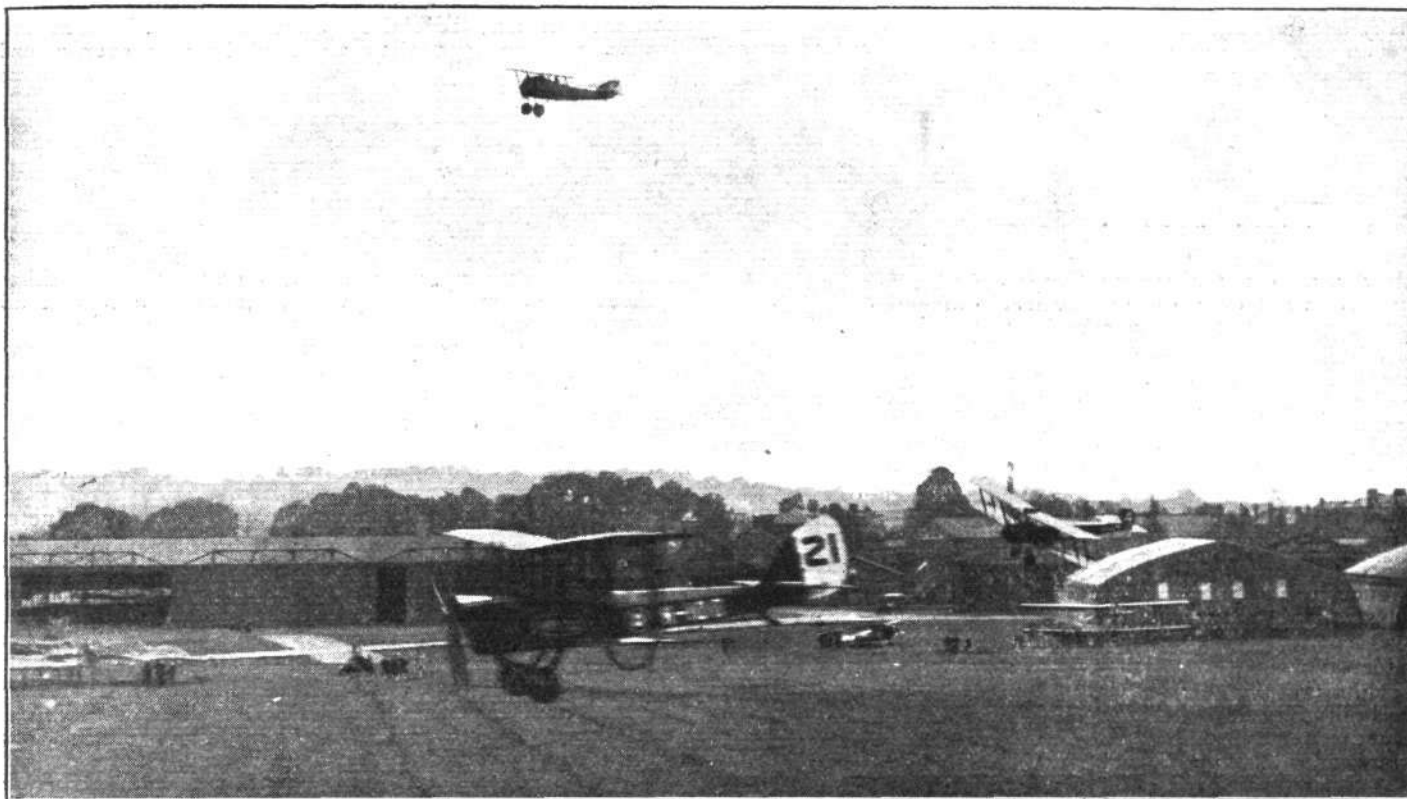
During the afternoon the usual exhibition and passenger flights were made.

Passenger work was again continued throughout the whole of Sunday afternoon.



"Flight" Copyright.

RACING AT THE LONDON AERODROME, HENDON: Start on Saturday of the first heat. Capt. Gathergood first away on an Airco, followed by Lieut. Park on an Avro, Capt. Robertson (Avro) and the winner of the final, Capt. Chamberlayne, on a G.W. Bantam.



"Flight" Copyright.

RACING AT THE LONDON AERODROME, HENDON: First heat on Saturday as seen from No. 1 Pylon. High up in the air, Capt. Chamberlayne (final winner), below Capt. Gathergood (21), first in the heat, followed by Lieut. Park (4)

Next Saturday's Cross-Country Race

A 20-mile cross-country handicap for the Hendon Trophy and £30, will be held at the London Aerodrome, Hendon, at the Summer Meeting, on Saturday afternoon next, at 4 p.m.

The course, of which five laps must be flown, is round the aerodrome pylons and a point about two miles out, i.e., Bittacy Hill—a distance of approximately four miles.

It is expected that the pilots will include Prodger, Draper, and Turner on B.A.T. machines; Chamberlayne, Carr, Hicks and Robertson on Grahame-White biplanes; Park and Hammersley on Avro biplanes, the latter flying the Avro "Baby"; Gathergood and Manton on Airco biplanes; and Smith on a Bristol monoplane.

Entries close at 12 noon to-day (Thursday), the 10th inst.

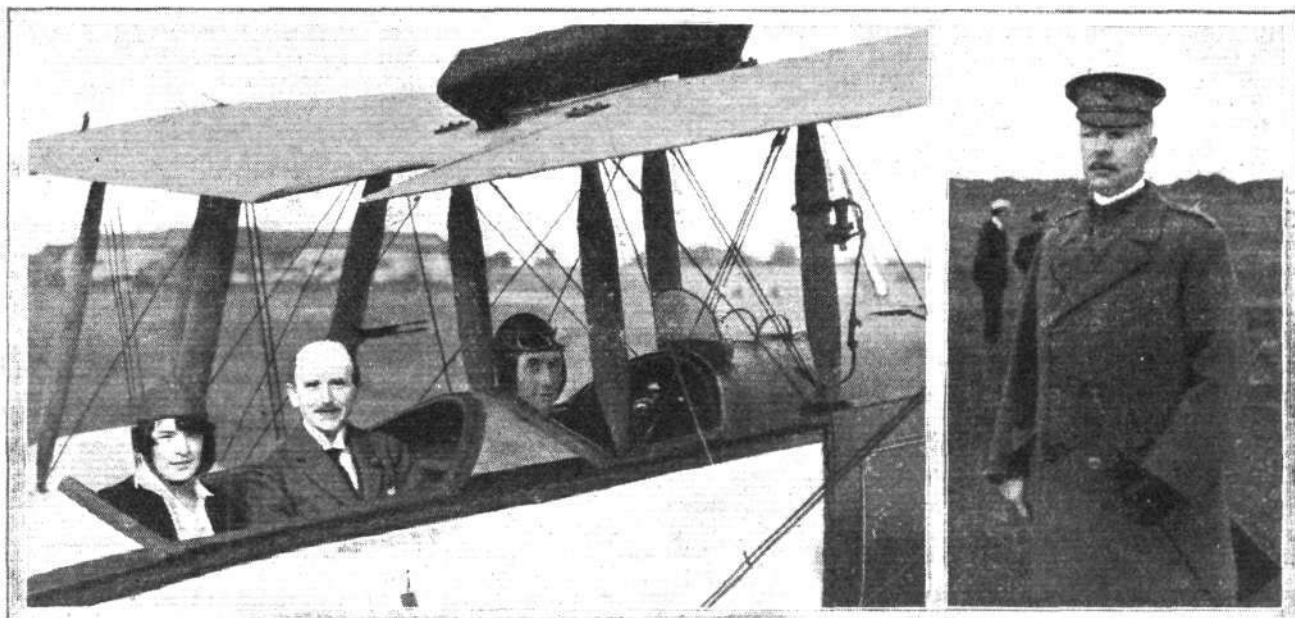
At intervals during the day, special flying displays and passenger flights will be carried out, and these will be repeated on the following day.

Additional enclosure accommodation has now been provided, and admission to the aerodrome is now from 9d. plus tax, children being half price.

Special flying displays will be given on the following afternoon, Sunday.

STAG LANE AERODROME

By arrangement with the *Daily Sketch*, *Evening Standard* and *Sunday Herald* the London and Provincial Aviation Co. spent the whole of Sunday afternoon and evening in taking up readers of the above journals for free flights. Early in the



AT HENDON AERODROME: On the right Gen. Fitzpatrick, Chief of Army Aviation in U.S.A. On left, Einer Petersen of the "Politiken," Denmark, has a joy-flight with Pilot Hicks

afternoon hundreds of visitors turned up, all with great expectations. A ballot for 100 free seats was held, and the lucky ones were given 15 minute flips without delay. Needless to say, there was considerable disappointment amongst the unlucky ones—tears were no uncommon sight! It was then that Mr. W. T. Warren showed his good nature and

sportsmanship, for he decided to ballot for another 10. Then, there still being some tears left, another 10. And then another! In fact, the end of it was that 75 additional free flips were given—and they all lived happily ever after! In the meantime the usual Jazz band, dances, and teas were going "all out."

THE R.A.F. AID COMMITTEE AND R.A.F. PRISONERS FUND

WITH the signing of Peace the labours of the above Committee draw to a close, and some extracts should prove interesting from the work done during the last four and a half years, which has been sent to all who have contributed in one way or another to the fund and enabled it to provide efficiently for the comfort of the R.A.F. on all the battle fronts.

The work was begun on October 9, 1914, by Lady Henderson and a small Committee at 3, Queen Anne's Gate, lent by the courtesy of the National Relief Fund. The R.F.C. at this time consisted only of 149 officers and 997 men. An appeal was sent out which brought in over £9,000, and work was immediately started. Separate parcels (containing a pair of socks, handkerchief, cigarettes, chocolate, bachelor's buttons, writing paper and pencil, etc., were baled and conveyed to France to each squadron, thereby providing each man with all small necessities. Cardigans, mufflers and shirts were also sent to every man. The small parcels were discontinued later on when the articles which they contained could be bought in the canteens in the field; comforts were substituted in bulk as requisitioned by the C.O.'s of the squadrons. Hundreds of flying suits and goloshes were sent out during the first winter. Both officers and men were supplied with Christmas fare in 1914 as there had been no time for official arrangements to be made.

To Mesopotamia, East Africa, Egypt and India mosquito nets and quinine and the usual extra clothing were sent, also the small individual parcels of comforts. Books in large quantities were asked for in 1914 by the men in France, and ever since then they have been sent, and have by this means started many a library.

The airmen in the Army of Occupation, also those in North Russia, received up till the closing of the fund anything that the O.C.'s requisitioned—indoor games, gramophones, books, boxing gloves and footballs being their chief request.

The following are some statistics of the various articles sent to France, Mesopotamia, Italy, Salonika, Egypt, India and East Africa:—

5,700 cardigans, 70,000 socks, 9,500 mittens and gloves, 11,800 mufflers, 6,800 helmets, 26,250 handkerchiefs, 6,550 oilskins, 5,160 gum boots, 850 shirts and vests, 615 footballs, 160 gramophones, 1,000 records, 5,000 games, 4,000 books, 15,000 sundry articles, also 202,335 small parcels, the contents of which have been noted above.

As the Flying Corps increased and the work with it, the premises at 3, Queen Anne's Gate became too small; consequently a move was made in March, 1915, to the first floor and other rooms of Surrey House, Marble Arch, Lady Battersea very kindly having permitted their use, the only expenses being electric light, fuel and caretaker.

Gradually the "Prisoner of War" question developed,

and early in 1915 a "first capture" food parcel was sent to each man—pilot, observer or N.C.O. We also opened a clothes department for the officers, and undertook to repack all parcels sent to us, taking out prohibited articles.

Lady Leighton and Miss Copland were responsible for the splendid work accomplished in this department.

When the Central Prisoners of War Committee was started in 1916 the fund came under its management, the organisation being of the greatest assistance. But all the money expended on our account had been raised by the Committee alone and independently of the Red Cross.

In October, 1914, a fund was inaugurated by Mrs. Sueter for supplying comforts for the men of the R.N.A.S., and for three and a half years the ratings at all the R.N.A.S. Stations both at home and abroad were provided with warm garments, books, games, gramophones, cigarettes, etc., about 200,000 articles being distributed. On the amalgamation of the two Flying Services, it was thought advisable that there should be only one joint fund for dispensing comforts; so in June, 1918, the R.N.A.S. Comforts Fund combined with the R.A.F. Aid Committee, the balance of their cash and stock being handed over to the amalgamated fund.

It will be of interest to the subscribers to know that over £7,000 was raised by the units of the R.N.A.S., the R.F.C., and R.A.F., and contributed to the fund for the benefit of their comrades.

Amongst the voluntary workers, the Committee especially mention Mrs. Pryor, M.B.E., Hon. Secretary for Prisoners of War, and Lady Barnes, M.B.E., Food Department, both of whom worked untiringly during the years the fund was in existence; also Miss Dudley, who was Secretary from its inauguration.

Other helpers, in kind, who are gratefully thanked by the Committee are Lady Battersea, for so generously lending her house for so long a period; to Mr. Neale, of Messrs. Phillips, Neale and Co., who provided office furniture, tables, screens, etc., free of charge; to Mr. Letts (Manager of Messrs. Crossley's, Ltd.) who, with others, helped us financially by raising large sums from aircraft factories; to Mr. Leigh Pemberton, who gratuitously advised on all legal matters; and Messrs. Smith and Earle, Chartered Accountants, for auditing the accounts free of charge.

Finally, a word of very special thanks is given to the Canadian Aviation Aid Club, which was affiliated with the R.A.F. Aid Committee early in 1918, and was always most generous in sending monthly supplies of comforts as well as donations in money.

We are glad to note that Lady Henderson has been given a D.B.E. and Lady Barnes and Mrs. Pryor a M.B.E. in recognition of their work with the fund.

Utilisation of Surplus War Material. Aero Engines for Commercial Purposes

CONSIDERABLE attention is now being directed to the subject of working up much of the surplus war material, at present being disposed of by the Ministry of Munitions, into commercial propositions. It is interesting to note in this connection that a very successful test has just been carried out as to the utility of aeroplane engines for commercial purposes. A 200 h.p. 8 cylinder aero engine was installed in a London factory as a stand by power unit, and the space occupied was approximately 8 feet long by 5 feet wide by 5 feet high, the total weight not exceeding 800 lbs., exclusive of radiators.

The water cooling was effected by running the water through the ordinary cast-iron radiator as used in factories for warming the air in the shops. Coal gas was used, and the general running was found to be quite satisfactory, the noise being almost negligible compared with that of the other machines in the shop.

It is estimated that the total output of this engine at a speed which may be reasonably supposed to give the engine a life of satisfactory duration should be about 75 h.p.

The Management of the factory concerned expressed

themselves satisfied with the running of the engine, and it would undoubtedly appear that such units constitute easily adaptable and convenient stand-bys for such purposes.

Bang Go Another 12 Million Yards

FOLLOWING Mr. Martin's deal of 40 million yards of aeroplane linen, the conclusion of another little transaction for 12 millions of balloon cloth now transpires. A Manchester man is this time the "acquiree" for, it is stated round about a million sterling, and in the view of those who ought to know this sale by the Cotton Textile Department of the M.O.M. is an advantageous one. Of quite a different character is this balloon fabric to the aeroplane cloth. It is much more saleable as, being of finer texture, it is well suited for the manufacture of men's shirts, ladies' underwear, etc.,

Amsterdam Air Exhibition

It is announced that up to date six British firms will take part in and send machines to the First Dutch Aviation Exhibition, to be held next month at Amsterdam—viz., the Aircraft Manufacturing Company, the British Aerial Transport Company, the Blackburn Company, the Gosport Flying Boats Company, the Handley Page Company, and Messrs. Vickers.



THERE is at least one thing in which it can honestly be said the French excel. They have imagination. A good many years ago—as time in aviation progress counts—M. Henri Deutsch de la Meurthe, President of the Aero Club of France, was continuously and persistently generous in providing funds for the encouragement of aeronautics. His *forte* lay in the fact that he usually placed his money on some really useful object, likely to lead to results for the general good. Not, perhaps, unnaturally, he would hope his prizes would be secured by his fellow-citizens. But nearly always the reward was open to the world for securing. And so the great art and science has been helped forward again and again by this wealthy sportsman.

Now he is to the fore again, immediately upon the heels of the signing of Peace, with a gift of a couple of million francs—£80,000—to help the Aero Club de France to organise air meetings. It is a princely donation, and gives an idea of how the imagination of the French has been fired, to be first in the art if it be at all within the realms of the possible.

In so many directions is there scope for recognition by the Italian powers of the helpful work in Italy during the War by our R.A.F., that it is good hearing to learn that, at the suggestion of the Italian Minister of Marine, silver and bronze medals have been conferred on a number of R.A.F. officers.

VENTNOR is the last popular resort to come into line with seaplane trips for visitors.

CONSIDERABLE difference of opinion appears to exist as to either the advisability or the seemliness of perpetuating, by means of memorials, the exact spots where the Huns deposited their more venomous "eggs" during their Zeppelin and aeroplane raids to London. In the case of the Westminster City Council it has been decided to erect tablets at places which were struck by bombs in air raids during the War. There are 19 such places in the Westminster area, and according to a police return 78 people were killed and 167 injured in this district during hostile air raids. The tablets will be fixed subject to the consent of the owners and occupiers of the properties affected. The cost of the tablets will be £266. Chelsea is the only other borough council affected which is in sympathy with the proposal, as Hammersmith, whilst in favour, had the agreeable fact to record that no bombs fell within the borough area. Nine other borough councils are not in favour of the proposal—Bermondsey, Camberwell, Deptford, Lambeth, St. Pancras, Shoreditch, Southwark, Wandsworth and Woolwich. From the other

17 borough councils and the Corporation of London no replies have been received. One of the members of the council, whose house was among those struck, said he was opposed to the proposal, which he regarded as a waste of public money. The members in favour of the proposal numbered 18, and 11 voted against.

WONDER if it was an oversight, or under some ancient form necessary, to omit in the Proclamation of Peace with Germany, signed by the King and read at various historical points in London on July 2, all mention of the Air. So that the omission—if it be an oversight—may be noted, we reprint the document, and then perhaps in the next peace proclamation, following the next war, we may hope to see the Air embodied. Nothing like being well in time for a job like this. The following is the text, and it will be noticed that apparently there is no *special* call to observe the terms of the peace document, when in the air. This loophole *might* be useful on emergency:—

"Whereas a definite Treaty of Peace between us and the Associated Governments and the German Government was concluded at Versailles on June 28 last: In conformity thereto we have thought fit hereby to command that the same be published in due course throughout all our Dominions: And we do declare to all our loving subjects our will and pleasure that upon the exchange of the ratifications thereof the said Treaty of Peace be observed inviolably as well by sea as by land and in all places whatsoever: strictly charging and commanding all our loving subjects to take notice hereof and to conform themselves thereto accordingly."

MR. G. GRENVILLE GREY, late Commander R.N.V.R., has expressed himself strongly as being at a loss to understand why the R.N. Anti-Aircraft Corps should have received such scanty official recognition for the work it did during the War. The occasion was at a meeting of the R.N. A.A.C. Association's first smoking concert the other day at Cannon Street Hotel, when Mr. Grey reminded the company that when the corps was formed in 1914 all agreed to become sailors, and to be trained for anti-aircraft work at a time when there were neither guns nor men for the defence of London against aerial attack. About 3,000 men passed through the corps. The Special Constabulary, he said, had received medals, and rightly so, but the corps had been overlooked, though it was the first in the field for the defence of London, and worked strenuously for four years and a half.

YET another uniform for the R.A.F. is on the stocks. This time it is a new "full-dress" outfit, it being stated that the



The "Dashing Rumpity," which is bringing in £3 and £5 per five and ten minutes' "flip" in Victoria, Australia, as referred to by "Kahminyah"

new cloth is to be somewhat lighter in shade than the present uniform. An early issue is to be made to non-commissioned and other ranks, who have so far only had the regulation khaki "field service" pattern jacket and breeches to play with.

FROM "Kahminyah," dating from Brighton, Victoria, Australia, an interesting letter is to hand. He writes:—

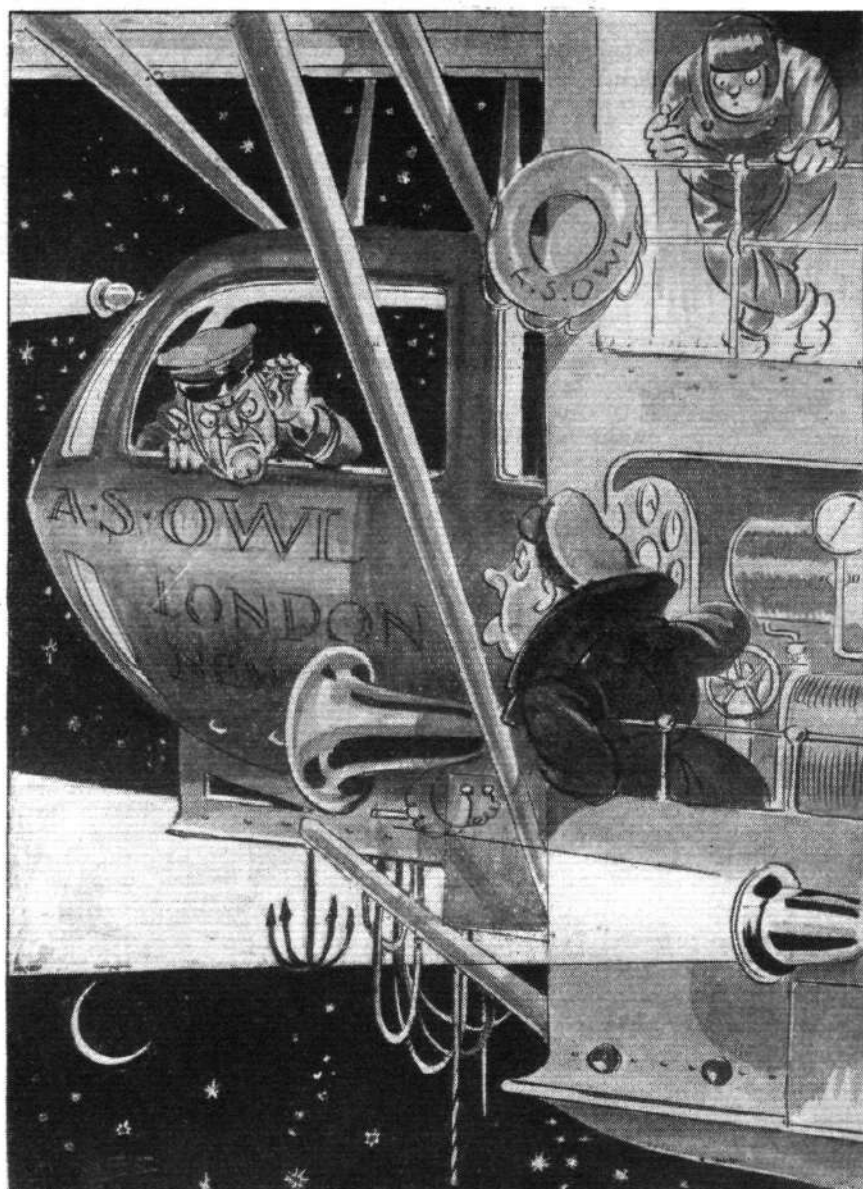
"The Commonwealth Government of Australia have devised a scheme for the organisation of an Australian Air Force, by which the aerial activities of the land and sea forces will be controlled. The main idea of the scheme is to give a beginning in Australia to every phase of aerial work. Two stations are to be maintained, one in Victoria, and one in New South Wales. The establishments of these stations will provide two squadrons of aeroplanes, one of seaplanes, an airship section and a balloon section. The strength proposed is to be 1,400 officers and men. The initial cost is estimated to be from about £500,000 with an annual expenditure of from £400,000 to £500,000 as maximum. Flying officers will be engaged for five years and then three years in the reserve. Technical officers will be selected, as far as possible, from the ranks of suitable N.C.O.s. and men."

"KAHMINYAH" also encloses a photograph, which we reproduce. "It shows," he says, "one of the first machines to be used there seriously for the business of making passenger flights. As you see it is an old 'Rumpity,' and is one of six acquired from the Defence Department recently. The prices for the flights of five and ten minutes are £3 and £5 respectively! And apparently there are plenty of people willing to pay that price for a flip in such a 'dashing' machine."

It is to be hoped after that, all our aerodrome proprietors this side of the world will not emigrate to this better land on profiteering intent.

AN *Evening News* correspondent scores with the following: An aeroplane has been flying over Kent dropping leaflets bearing the words—"Wake up and buy Victory Bonds!" One of the leaflets fell in a village churchyard.

THERE appears to be no end to the wild-game stunting possibilities of aeroplanes. The latest little scheme is up



Captain of Atlantic Airship (to Chief Engineer): "What are we stopping for, Mr. Rivetts?" **Chief Engineer:** "Well, Sir, we're passing through the Milky Way, and the propeller's full of butter!"

against "rogue" elephants in the Bush. These are to be, according to the *African World*, tackled by means of bombing planes, until they are no more. Next, please.



Free flights at Stag Lane Aerodrome: Last week end, Mr. Warren, of the London and Provincial Aerodrome, gave over 170 free flights in connection with offers made by different newspapers. Only 100 flights had been advertised and offered, but not wishing to disappoint a number of the crowd who had foregathered, Mr. Warren continued to distribute orders for flips until dusk stopped his generosity. Our photo. shows Mr. Warren passing the ballot for the last flight.



Casualties

Lieut. DONALD ALEXANDER FOWLER, R.A.F., who was accidentally killed on June 26 at the age of 24, while flying at Winchester, was the son of the late Lieut.-Col. B. W. FOWLER, R.A.M.C., and of Mrs. Fowler, 15, St. Minver Road, Bedford.

Capt. RICHARD LITTON LYSER-SMYTHE, R.A.F., Flt.-Comdr. Damascus, formerly lieut. 3rd Gordon Highlanders, who was drowned on June 19, at the age of 22, while bathing at Jaffa, was the youngest son of Col. and Mrs. Lyster-Smythe, of Barbavilla, Westmeath.

Married

Lieut.-Col. WILMOT BOYS ADAMS, late R.A.F., was married on July 2 at St. Paul's, Knightsbridge, to Enid, second daughter of J. Carnegie ARBUTHNOT, of Balnamoon, Brechin, and 34, Roland Gardens, S.W.

REGINALD ARTHUR CARTLEDGE (late H.A.C. and R.A.F.), elder son of Arthur Cartledge, 9, Chislehurst Road, Richmond, Surrey, was married on July 2 at Barnes Parish Church, to LAURA WINIFRED MAY, eldest daughter of the late THOMAS PRITCHARD, C.E., and Mrs. Pritchard, of 56, Treen Avenue, Barnes.

Capt. ARNOLD JOHN DICK, late R.A.F., eldest son of the late Mr. Walter David Dick and Mrs. Dick, of Hillhead, Glasgow, was married on July 1, at St. Mary Abbott's, Kensington, to Miss MARGERY ELIZABETH WISEMAN, third daughter of Elizabeth, Lady Wiseman and the late Capt. Sir William Wiseman, R.N.

Capt. GRAHAM DONALD, D.F.C. (late Flt.-Comdr., R.N.), elder son of the late Capt. D. P. Donald, of Johnstone, Renfrewshire, Scotland, was married on June 30 at St. Bartholomew's the Great, E.C., to CLAIRA SYLVIA, third daughter of Lieut.-Col. J. H. STACY, T.D., R.A.M.C.T., of Great Yarmouth (late of Norwich).

Lieut. JAMES T. PAINE, R.A.F., was married on June 3 at St. Alban's, Westcliffe-on-Sea, to MABEL E. NORTON, youngest daughter of Mrs. Norton and the late Fredk. Norton, of 20, Gordon Road, Lowestoft.

To be Married

Sir ARTHUR WHITTEN BROWN, the Atlantic aviator, is to be married to Miss KENNEDY on July 30.

The engagement is announced between Capt. ROLAND NORTHOVER, of the 4th Lancs. Fusiliers, late R.A.F., and DOROTHY, only daughter of Mr. and Mrs. CHARLES PARSONS, of 110, Park Street, Grosvenor Square, W.

Items

The CROWN PRINCE OF ROUMANIA, who was accompanied by Sir Henry and Lady Mainwaring, visited the Handley Page aeroplane works at Cricklewood on July 1, and was shown over the establishment by Mr. Handley Page. The Crown Prince and Lady Mainwaring afterwards had a trip in a two-engine Handley Page Rolls-Royce aeroplane, this being the first time the Crown Prince had been in the air. The pilot, Lieut.-Col. Douglas, M.C., D.F.C., took the machine to a great height, and gave his passengers a very fine view of London.

AVIATION IN PARLIAMENT

British Cellulose Company (Committee's Report)

Mr. RAPER, on July 1, asked the Prime Minister if he will state when the Report of Lord Sumner's Committee regarding the British Cellulose and Chemical Manufacturing Co. will be forthcoming?

Mr. Bonar Law: It is hoped that the Report will be ready before the end of the month.

R.A.F. Scapa Seaplane Station

Capt. BROWN, on July 1, asked the Under-Secretary of State to the Air Ministry whether it is necessary to maintain the Scapa seaplane station, where four men are retained without anything to do?

Maj.-Genl. Seely: Scapa seaplane base is being retained temporarily until Smoogroo is ready, and will be given up shortly. The station is in charge of a care and maintenance party who are responsible for equipment and stores.

Hours (Numbering)

Col. WEDGWOOD asked the Under-Secretary of State to the Air Ministry whether the system of numbering the hours continuously up to 24, which was adopted in the Army last year, has also been adopted in the Royal Air Force; and, if so, from what date and under what Regulation?

Maj.-Genl. Seely: The system in question was adopted throughout the Royal Air Force from midnight October 19-20, 1918, under Air Ministry Weekly Order No. 1,232, dated October 10, 1918.

Flying Exhibitions

Mr. JOYNSON-HICKS asked the Under-Secretary of State to the Air Ministry whether any, and, if so, what arrangements are being made for flying exhibitions by members of the Royal Air Force in connection with Peace or other celebrations?

Maj.-Genl. Seely: No special exhibitions by Royal Air Force machines are being arranged for. All available machines are already demonstrating on behalf of the "Victory Loan." I think that this is the most useful way of celebrating Peace at the present time.

Week-end Leave

Mr. CAMPBELL asked the Under-Secretary of State to the Air Ministry whether the officer commanding No. 10 Group, Royal Air Force, has issued an order suspending week-end leave, contrary to the practice hitherto; and if the Air Ministry intend the Order to stand?

Maj.-Genl. Seely: Week-end leave has not been stopped. The pre-war practice of granting week-end leave from Saturday midday to Sunday night has been reintroduced. At the same time it has been found possible to restore the practice prevailing before the war of observing general holidays and the giving of extended leave so far as the exigencies of the service permit.

Lady Shorthand writers (Ripon)

Mr. RENDALL asked the Under-Secretary of State to the Air Ministry if he is aware that two lady shorthand writers were engaged at the Royal Air Force, Ripon depot, in January last, and that, after training in exceedingly technical work, they were informed, about five or six weeks after being engaged, that unless they joined the Women's Royal Air Force they would be discharged; whether, after consideration, they informed their officer, Sec. Lieut. Barton, that they would join the Women's Royal Air Force, but heard

nothing more until the last Friday or Saturday in March, when, without any previous warning, they received a week's notice to go; whether thereupon two other ladies were engaged, one of whom had no previous knowledge of office work and both of them required considerable training to make them efficient; what reasons caused this change; and will he insist on an impartial inquiry into the chief section leader's conduct, he being responsible indirectly for the dismissals?

Maj.-Genl. Seely: I have not yet been able to trace the incident referred to, but further inquiries are being made both by the Air Ministry and the War Office, as the depot at Ripon is administered by that Department. The result of the inquiries will be communicated to my hon. friend as soon as possible.

Air Navigation Regulations

Mr. JOYNSON-HICKS asked the Under-Secretary of State to the Air Ministry whether any number of hours' solo flying is necessary before civilian pilots are licensed; and whether inquiries are being made regarding all crashes which occur in civilian flying?

Maj.-Genl. Seely: (1) Tests required for civilian pilots are specified in the directions issued under Air Navigation Regulations, 1919. All pilots who have been licensed have had a large number of solo flying hours to their credit. (2) All possible inquiries are made. The question is being considered by a Committee dealing with points arising on the subject of the Air Navigation Regulations.

R 34 Airship

Lieut.-Comdr. KENWORTHY, on July 2, asked the First Lord of the Admiralty if he will state the cost for construction of the R 34 type of airship, the cost of the housing-shed and extensions, the personnel required at the shed for handling, berthing, cleaning the airship, etc., the estimated total monthly cost of the airship when in commission, including pay of persons employed in ship and shed; how many of these airships are under construction; and whether work is being continued on them?

Dr. Macnamara: The cost of constructing an airship of R 34 type is approximately £350,000. The cost of the housing-shed at East Fortune, together with extensions and wind screens, is approximately £166,000. Fourteen officers and 400 men are required at the station for handling, berthing, cleaning airships, etc. The estimated total monthly cost of the airship when in commission depends on the distance flown. Taking as basis 8,000 nautical miles per month at a speed of 40 knots, it amounts to about £2,600 at current rates for cost of petrol, oil and gas. This figure includes the wages of crew and also one-fourth the total pay of the personnel required for handling, etc., as this latter is adequate for maintaining four airships in commission. No further airships of this class are under construction, but six of improved types have been ordered and are in varying stages of construction. Work upon them is being continued.

Lieut.-Comdr. Kenworthy: Will Peace make any difference to the programme?

Dr. Macnamara: Speaking off-hand, I should say no.

Aeroplanes (Automatic Control)

Capt. WEDGWOOD BENN asked the Under-Secretary of State to the Air Ministry whether he can amplify the statement recently made by Mr. Baker,

the United States of America Secretary for War, on the question of automatic control of aeroplanes?

Maj.-Genl. Seely: I regret that I am not in a position to do so at the moment. I will have further investigation made and communicate with my hon. and gallant friend.

Married Quarters

Maj. LLOYD-GREAME asked the Under-Secretary of State to the Air Ministry whether he is aware of the expense to which married officers and other ranks in the Royal Air Force stationed at many aerodromes are put to find housing accommodation; and if any steps are being taken to provide married quarters at permanent stations?

Maj.-Genl. Seely: I realise that married officers and other ranks of the Royal Air Force are probably finding difficulty in obtaining suitable accommodation near aerodromes. Married quarters will eventually be provided at permanent stations, and in the meantime the possibility of making temporary use of suitable hutting accommodation where available is being investigated.

Women's Corps (Railway Warrants)

Mr. F. C. THOMPSON asked the Under-Secretary of State to the Air Ministry why members of the Women's Royal Air Force are not given free railway warrants when proceeding home on leave; and if he will take steps to remedy this?

Maj.-Genl. Seely: The general rule is that expenses in connection with leave are not a public charge. Certain concessions were made to the Army and Royal Air Force as a war measure, but these were not extended to the women's corps attached to the Army and Royal Air Force, because of the difference in their conditions of service. The question of making similar concessions to the women's corps is now under consideration.

Flying-Boat Contracts

Mr. MACQUISTEN, on July 3, asked the Secretary to the Admiralty whether, at the outbreak of war, the Admiralty purchased a flying boat of new and successful design, by Mr. Norman Thompson, built by Messrs. White and Thompson (subsequently renamed the Norman Thompson Flight Co. in 1915), a pioneer firm, established in 1909; whether in 1915 the Admiralty placed an order with the Norman Thompson Flight Co. for ten flying-boats of such size that the firm were compelled to lay out considerable money in additional buildings to their existing works; whether for twelve months after these extensions were completed in May, 1916, the Government were aware that the firm were only able to work at about one-third full output owing to constant changes in design ordered by the Admiralty and shortage of orders; and, if so, whether he will explain why in the autumn of 1916 the Admiralty refused to allow the War Office to place orders with the firm?

Dr. Macnamara: With my hon. friend's permission I will circulate the answer in the Official Report.

The following is the reply referred to:

In August, 1914, the Admiralty requisitioned a seaplane from Messrs. White and Thompson. The seaplane was an improved form of the "Curtiss" single-engined flying-boat, of which Messrs. White and Thompson were sole concessionaries.

Trials of this machine were successful, and as a result of the trials the machine was purchased and six further machines were ordered. A further order for ten "America," type seaplanes, to be fitted with engines to be supplied by the Admiralty, was placed with the firm in July, 1915, tender price being finally accepted December 28, 1915. An advance of 25 per cent. of the contract price was made with the acceptance of tender at firm's request, the firm stating that the greater part of the profits they might derive from the contract would be spent on new factory extensions and land which they were making arrangements to purchase. The firm did not state that such extensions were necessary on account of the size of the flying-boats.

Shortly after the order was placed it was decided to fit 140 horse-power instead of 100 horse-power engines in order to improve the performances of the machines. At this time the firm had in hand 18 S. 38 type school aeroplanes; delivery of the last of these was made on June 7, 1916. In July, 1916, an order for 20 F.B.A. flying boats was placed with the firm. Various orders for spare parts were also in hand. In August, 1916, the War Office asked the Admiralty whether there was any objection to firm's resources being utilised for supply of spare parts.

The ten "America" and 20 B.F.A. flying-boats were then under construction, and it was under consideration to place an order for small flying-boats of the firm's own design, in which circumstances the War Office was informed that the Admiralty orders would absorb the firm's whole output for some time.

Mr. Macquisten asked the Parliamentary Secretary to the Ministry of Munitions whether a design of flying-boat by the Norman Thompson Flight Co., known as type N.T. 2 B, and officially adopted by the Air Ministry in April, 1918, as a standard naval construction machine, was ordered in repetition from them and from other firms; whether, in June, 1917, the Air Board required the firm to increase their works for the production of one of their designs of flying-boats, type N.T. 4 A, and subsequently agreed to advance £20,000 for new buildings; whether, after placing considerable orders in the autumn of 1917 for N.T. 4 A flying-boats, the Air Board cancelled those orders in January, 1918, and gave no new orders until May, 1918, after the appointment of a receiver for the debenture holders; whether the Aircraft Finance Department of the Ministry of Munitions in October, 1918, refused the recommendation of the Lubbock Committee of the Treasury to pay off the debentures issued to Messrs. Cox and Co. as security for advances and reconstitute the control of the company in the directors; and, if so, whether he proposes to take any action in the matter?

The financial Secretary to the Ministry of Munitions (Mr. James Hope): The answer to the first three parts of this question is in the affirmative. No such recommendation was ever made by the Lubbock Committee as is suggested in the fourth part of the question, and the fifth part does not accordingly arise.

Mr. Macquisten: Will the hon. gentleman make an investigation into the whole transaction of the Admiralty with this particular company, and allow Mr. Thompson to appear before him?

Mr. Hope: Not on the information I have at present. If my hon. and learned friend will give me any more information, I shall be delighted to act upon it, but at present his premises, I think, are wrong.

Mr. Macquisten: As the hon. gentleman's information is so meagre, will he take the steps I suggest, so as to get the necessary information?

Mr. Hope: I take it that it is for my hon. and learned friend to supply me with premises on which I can reasonably act.

R.A.F. Technical Officers

Sir F. HALL asked the Under-Secretary of State to the Air Ministry if he can state what amount of technical pay, if any, it has been decided to award to technical officers in Class A of the Royal Air Force; whether the same is to be retrospective from September 1, 1918, and will include technical officers demobilised before the decision has been arrived at; and, if so, whether an officer who would thus be entitled to additional pay can claim the same together with gratuity based on the larger amount of pay?

The Under-Secretary of State for Air (Maj.-Genl. Seely): The whole question of pay is now under consideration, and I hope to be able to give further information in a short time. Perhaps the hon. and gallant gentleman will put down a question next week.

Atlantic Flight (Airship R 34)

Capt. W. BENN asked the Under-Secretary of State to the Air Ministry whether he can make a statement about the Atlantic trip of the airship R. 34?

Maj.-Genl. Seely: His Majesty's Airship R. 34 left East Fortune, near Edinburgh, at 2.48 yesterday morning on an experimental cruise across the Atlantic. She is equipped with every known form of scientific instrument which it was considered would be of value for the trip. We are sure that much valuable information will be obtained as to the possibilities of air traffic across the Atlantic. All being well she will drop messages at Newfoundland and Halifax, and proceed to New York. I should like to acknowledge the great assistance given by the Admiralty in every respect to the Air Ministry who are responsible for the flight. His Majesty's ships, *Tiger* and *Renown*, are in the Atlantic sending and receiving wireless messages. At 6 o'clock this morning the airship was reported to be about 1,030 miles on her course, and 885 miles from St. Johns. The weather reports are very favourable, and it is hoped that she will soon get a following wind.

I may add that what weighed with us most in deciding to attempt this flight was the hope of thereby making still closer the ties between this country and America.

R.A.F. Badges

Lieut.-Col. ARCHER-SHEE asked the Secretary of State for War whether officers who have qualified as pilots or observers during the War, and have served in that capacity at the front, are entitled to wear wings on their uniform if since transferred to a line regiment?

Mr. Churchill: Badges of the Royal Air Force may not be worn by Army officers after return to Army duty with their units. A notification to this effect was issued in Army Council Instruction 1110, of 1918.

Cellulose Acetate

Lieut.-Col. THORNE asked (1) the Secretary of State for War the names of the firms referred to on page 5 of the Fifth Report of the Select Committee on National Expenditure, who were invited to tender in July, 1915, for supplies of cellulose acetate and what was the reason for refusing to send a tender form to the Cellon Co. of London, and who was the person responsible, and his name, who thus refused permission to an English company and invited tenders from a firm of neutrals adjacent to enemy territory, the Cellonit Gesellschaft Dreyfus, of Basle, who were advertising their wares in the enemy Press; and was the Department aware of this firm's advertisements in the *Chemiker Zeitung* when they invited them to tender; and (2) the Parliamentary Secretary to the Ministry of Munitions the reason why in March, 1918, his Department made an Order forbidding the importation of cellulose acetate as indicated in the Fifth Report of the Select Committee on National Expenditure, in view of the fact that all that which was being produced in this country was pronounced to be defective; will he state the names of the contractors who carried out the erection and extension of the British Cellulose Co.'s work at Spondon, Derby; and whether this was a contract between the Ministry of Munitions and the builders or the British Cellulose Co. and the builders?

Mr. Kellaway: I will reply to these questions at the same time. A Committee appointed by the Government is examining this question, and, as was stated by the Leader of the House on July 1, it is hoped that their report will be ready by the end of the month. In these circumstances, I do not think it would be desirable to make any statement at present.



"Civiatory Eframb, London"

FROM the Air Ministry comes the notification that "Civiatory Eframb, London," has been registered as the telegraphic address of the Civil Aviation Department, Air Ministry, India House, Kingsway.

Enterprise in Ceylon

A NEW Aviation Company with headquarters in Ceylon is working with the object of establishing and maintaining regular air services of all kinds.

Seaplanes Scoring Against Bolshies

FROM Keur it is reported on June 30 that our seaplanes have successfully bombed the enemy's positions, greatly damaging buildings, and have destroyed a train with a direct hit. Two seaplanes were shot down by machine guns, and one of them wrecked, but the aviators succeeded in returning to our lines. There were no casualties in these raids.

Afghans' Methods

RUMOURS recently gained currency that the Ameer's Army had obtained delivery of four aeroplanes for attacking

our troops. The cat is now out of the bag in the fact having transpired that these aircraft delivered at Kabul are "dummies" which were secretly constructed under the Ameer's orders, in order to reassure the scared population, that they were also able to carry on War in the air as readily as the British. For the moment the dummies are reported to have had the desired effect, and, following Hun methods, most wonderful tales of imaginary exploits of Afghan airmen are being circulated for the benefit of the Ameer's subjects.

A Baby Aeroplane from Sweden

A TRIAL flight is reported from Malmoe, Sweden, of a new small type of aeroplane made at the Paalson aeroplane factory there. The machine is said to weigh only 700 lb., and it is capable of carrying another 440 lb. The body is described as cigar shaped, and constructed so as to reduce the air resistance to a minimum. It has a Thulin 50 h.p. Gnome engine of special construction, capable of giving a speed of about 80 miles an hour.

THE ROYAL AIR FORCE

London Gazette, June 27.

Administrative Branch

The following relinquish their commns. on ceasing to be employed:—Sec. Lieut. M. Landless (Sec. Lieut., Gloster R.); April 29, 1918. Lieut. (Hon. Capt.) P. W. McLean (Capt., Sea. Highrs.); March 14. Capt. G. A. Revington (Lieut., R.N.); June 25. Capt. G. R. Turner (Capt., E. Kent R.); June 27.

(Then follow the names of 22 officers who are transfd. to the Unemployed List under various dates.)

Sec. Lieut. G. P. Forbes relinquishes his commn. on account of ill-health, and is permitted to retain his rank; May 18.

Sec. Lieut. E. R. Tremlett to take rank and precedence as though his appoint. as Sec. Lieut. bore date March 26.

The initial of C. Howard (Capt. and Qtr., Gen. List) is as now described, and not "G.," as stated in the *Gazette* of Feb. 14.

The surname of Sec. Lieut. H. J. Cutler is as now described, and not "Cutter," as stated in the *Gazette* of April 29.

The surname of Capt. S. Walters is as now described, and not "Watters," as stated in the *Gazette* of May 2. The notifications in the *Gazette* of Aug. 16 and Nov. 29, 1918, concerning Lieut. H. Tilley (D.L.I.) are cancelled. The notification in the *Gazette* of Jan. 31 concerning Lieut. J. N. Mackay is cancelled. The notification in the *Gazette* of May 13 concerning Capt. (actg. Maj.) L. C. Coates is cancelled. The notification in the *Gazette* of May 27 concerning Sec. Lieut. C. B. Dick-Clealand is cancelled. The notification in the *Gazette* of June 13 concerning Sec. Lieut. J. Dale is substituted for the notification which appeared in the *Gazette* dated May 27.

Technical Branch

Capt. A. Belton is to be graded for purposes of pay and allowances of Maj. whilst employed as Maj. (Grade A); May 1.

Capt. E. Holloway, O.B.E., to be Capt., Grade (A) from Grade (B); May 22.

Lieut. S. W. Davies to be actg. Capt. whilst employed as Capt., Grade (A), from Feb. 1 to April 30.

Sec. Lieut. (Hon. Lieut.) F. W. Day to be actg. Capt. whilst employed as Capt., Grade (B), from July 24, 1918, to April 30.

Lieuts. to be Lieuts., Grade (A) from (Ad.):—Lieut. A. L. C. Hartland-Rowe; Sept. 3, 1918 (substituted for the notification in the *Gazette* of April 18. Lieut. D. A. Parker; June 23. Lieut. R. Macfarlane to be Lieut., Grade (B), from (Ad.); May 13 (substituted for the notification in the *Gazette* of June 17).

Sec. Lieut. F. J. F. English to be Lieut.; Dec. 30, 1918 (substituted for the notification in the *Gazette* of Jan. 3).

Sec. Lieut. (actg. Lieut.) A. J. Macnab, M.C., to be Lieut., Grade (A); June 26, 1918.

Sec. Lieuts. to be Sec. Lieuts., Grade (A) from (Ad.):—R. Lyne; Jan. 1. MacD. Goodall; June 13.

(Then follow the names of 29 officers who are transfd. to the Unemployed List under various dates.)

Lieut. C. S. Willmott relinquishes his commn. on account of ill-health, and is permitted to retain his rank; June 10.

Lieut. G. H. C. Crooke-Rogers (Lieut., Worc. R.) resigns his commn., and is permitted to retain his rank; June 28.

Lieut. (actg. Capt.) R. Stephenson, D.F.C. (Temp. Sec. Lieut., Ches. R.), resigns his commn., and is permitted to retain the rank of Capt.; June 28.

Sec. Lieut. H. J. C. White (Sec. Lieut. in Army) resigns his commn., and is permitted to retain his rank; June 28.

The rank of Lieut.-Col. A. S. Hellawell, O.B.E., is as now shown, and not Maj., as stated in the *Gazette* of April 4.

The Christian name of Lieut. Henry Smith is as now described, and not as stated in the *Gazette* of March 4. The surname of E. G. Davidson is as now described, and not E. G. Davidson, as stated in the *Gazette* of Oct. 22, 1918. The notification in the *Gazette* of March 5 concerning Lieut. C. A. Elliott is cancelled.

The notification in the *Gazette* of March 11 concerning Sec. Lieut. H. A. Creswell is cancelled.

The notification in the *Gazette* of May 23 concerning Lieut. H. H. Ballard is cancelled.

Chaplains' Branch

The Rev. A. J. N. Saunders is transfd. to the Unemployed List; May 28.

Memoranda

Capt. E. J. Sayer, M.C., is granted the hon. rank of Maj.; June 3.

Sec. Lieut. C. F. Kearns (A. and S.) is granted the hon. rank of Lieut.; April 1.

The following Overseas Cds. are granted temp. commns. as Sec. Lieuts.:—60527 G. F. Evans, 171428 F. C. Miller; Feb. 15.

Temp. Hon. Lieut. S. H. Troughton relinquishes his hon. commn. on ceasing to be employed; June 16.

(Then follow the names of four officers who are transfd. to the Unemployed List under various dates.)

Lieut. J. E. B. Thornely, O.B.E., relinquishes his commn. on account of ill-health contracted on active service, and is granted the rank of Maj.; June 20.

The notification in the *Gazette* May 9 concerning Sec. Lieut. F. T. L. Avis is cancelled.

Air Ministry, July 1.

The following temporary appointments are made:—

Staff Officer, 2nd Class (P.).—Paymr., Lieut.-Comdr. H. L. Jackson (R.N.); Feb. 13, and is granted a temp. commn. as Maj. (T.).—Lieut. J. G. N. Clift; April 1, 1918, to Sept. 1, 1918, and to be actg. Maj. whilst so employed.

Staff Officer, 3rd Class (T.).—Lieut. (actg. Maj.) J. G. N. Clift; Sept. 2, 1918, from S.O., 2nd Class, relinquishing the actg. rank of Maj., and to be actg. Capt. till April 30.

The following temporary appointment is made:—

Staff Officer, 3rd Class (P.).—Capt. R. R. L. Thom; June 1.

Flying Branch

Maj. R. B. Ward to be actg. Lieut.-Col. whilst employed as Lieut.-Col. (A. and S.); June 16.

Capt. L. P. Paine, D.S.C., to be graded for purposes of pay and allowances of Capt. (S.), and to be actg. Maj., without the pay and allowances of that rank; March 25.

Cpts. to be graded for purposes of pay and allowances of Cpts. whilst employed as Cpts.:—L. C. W. Trend (A. and S.); Feb. 3. Lieut. G. Le B. Croke (O.); May 1. Lieut. R. P. M. Whitham to be actg. Capt. whilst employed as Capt. (A.), from April 30, 1918, to April 30.

Lieut. T. A. Warne-Brown, D.S.C., to be graded for purposes of pay and allowances of Capt. whilst employed as Capt. (A.); May 1.

Lieut. S. W. Symons to be Lieut. (A.), from (T.); Dec. 31, 1918.

Sec. Lieuts. to be Lieuts.:—(Hon. Capt.) A. A. J. Poole; May 31, 1918. (Hon. Capt.) F. R. Ashmead; Aug. 23, 1918 (substituted for notification in *Gazette* March 7). F. Coxen; Nov. 2, 1918. A. E. N. Ashford; April 25.

R. E. Shears (Temp. Lieut., Glouc. R.) is granted a temp. commn. as Sec. Lieut. (O.); Oct. 27, 1918, and to be Hon. Lieut. (substituted for notification in *Gazette* Dec. 10, 1918).

The following relinquish their commns. on ceasing to be employed:—Lieut. (Hon. Capt.) J. Hirschberg (Capt., N.Z. A.S.C.); Dec. 28, 1918. Sec. Lieut. S. Hodgson (Sec. Lieut., Suff. R.); April 2. Capt. I. C. Barclay (Capt., Sea. Highrs.); April 16. Lieut. E. F. J. Bull (Lieut., Worc. R.); June 12. Sec. Lieut. (Hon. Capt.) H. R. Dennison (Capt., Brit. Col. R.), Lieut. C. R. Hall (Lieut., Quebec R.); June 18. Sec. Lieut. (Hon. Lieut.) J. W. Grant (Lieut., E. Ont. R.), Lieut. E. T. Lough (Lieut., actg. Capt., Manitoba R.); June 19.

(Then follow the names of 200 officers who are transfd. to the Unemployed List under various dates. We regret that owing to great pressure on our space it is impossible to reprint this portion of the List.—Ed.)

Lieut. W. H. Gibson relinquishes his commn. on account of ill-health contracted on active service, and is permitted to retain his rank; June 18.

Lieut. D. J. Allen (Manitoba R.) relinquishes his commn. on account of ill-health contracted on active service; May 3.

The following Sec. Lieuts. relinquish their commns. on account of ill-health, and are permitted to retain their rank:—W. S. Winter, contracted on active service (substituted for the notification in the *Gazette* of Feb. 7). M. S. Dickinson (substituted for the notification in the *Gazette* of March 18. S. J. Bolitho; June 12 (substituted for the notification in the *Gazette* of March 14); May 20. H. T. Watts; June 19.

The rank of Lieut. T. M. Cornish is as now described, and not as stated in the *Gazette* of May 9.

The initials of Sec. Lieut. C. D. Neill are as now described, and not "C. W.," as stated in the *Gazette* of May 2.

The initials of Sec. Lieut. I. L. Wood are as now described, and not "T. L.," as stated in the *Gazette* of May 9.

The initials of Sec. Lieut. A. Sykes are as now described, and not "Arthur A.," as stated in the *Gazette* of May 23.

The surname of Lieut. E. R. Trendell is as now described, and not "Tundell," as stated in the *Gazette* of May 13.

The surname of Capt. C. Gordon-Davis is as now described, and not "C. G. Davis," as stated in the *Gazette* of May 20.

The surname of Lieut. B. F. Smith-Clebourne is as now described, and not "B. F. S. Clebourne," as stated in the *Gazette* of May 20.

The name of Lieut. E. F. Van der Riet, D.F.C., is as now described, and not as stated in the *Gazette* of May 23.

The notification in the *Gazette* of Sept. 6, 1918, concerning Sec. Lieut. W. E. Baxter is cancelled.

The notification in the *Gazette* of Jan. 24 concerning Sec. Lieut. G. J. C. Tigar is cancelled.

The notification in the *Gazette* of March 21, concerning Sec. Lieut. E. J. Norris is cancelled.

The notification in the *Gazette* of April 1 concerning Lieut. E. N. MacDonald is cancelled.

The notification in the *Gazette* of April 29 concerning Sec. Lieut. (Hon. Lieut.) A. E. Overton is cancelled.

The notification in the *Gazette* of May 13 concerning Sec. Lieut. A. G. Middleton is cancelled.

The notification in the *Gazette* of May 16 concerning Lieut. R. J. Marshall is cancelled.

The notification in the *Gazette* of June 10 concerning Lieut. R. B. Wainwright is cancelled.

The notifications in the *Gazette* of June 20 concerning the following officers are cancelled:—Sec. Lieut. J. Martin, M.M., Sec. Lieut. T. E. Winckworth.

The notification in the *Gazette* of June 24 concerning Sec. Lieut. L. C. Phippen is cancelled.

Administrative Branch

Maj. K. L. Buist to be Maj., from (S.O.); June 2.

Capt. A. M. Wilson to be actg. Maj. whilst employed as Maj.; May 1.

G. N. F. Powell (Maj., London R.) is granted a temp. commn. as Capt., and to be Hon. Maj.; April 1, 1918.

Sec. Lieut. F. T. L. Avis to be actg. Capt. whilst employed as Capt.; May 1.

Lieut. H. W. Sidley to be Lieut., from (S.O.); May 23.

Lieuts. (A.) to be Lieuts.:—D. H. Bell, M.C., C. A. Umbers; June 11.

G. D. Daly; June 12.

The following are granted temp. commns. as Sec. Lieuts.:—G. A. Maddams, H. E. Phillip; June 28.

The following relinquish their commns. on ceasing to be employed:—Lieut. Lord H. Cecil; Jan. 18 (substituted for notification in the *Gazette* of April 18, 1918. Lieut. (Hon. Capt.) W. C. Sharpe (Capt., R. W. Surrey R.); April 15. Capt. (actg. Maj.) D. G. F. Darley (Capt., Dragoon Guards); April 24. Capt. J. T. Waller, M.C. (Capt., Leic. R.); June 4. Lieut. N. A. Arthur (N.Z., Wellington R.); June 11.

(Then follow the names of 33 officers who are transfd. to the Unemployed List under various dates.)

Lieut. J. W. Holdsworth is granted the hon. rank of Capt; Aug. 9, 1918.

Lieut. (Hon. Capt.) J. W. Holdsworth relinquishes his commn. on account of ill-health, and is permitted to retain the rank of Capt.; May 14.

Capt. H. T. Holdstock, M.C., relinquishes his commn. on account of ill-health and is permitted to retain his rank; June 19.

The following Sec. Lieuts. relinquish their commns. on account of ill-health, and are permitted to retain their rank:—J. D. Dalzell; June 19.

I. C. Bannister; June 27 (substituted for notification in *Gazette* March 11).

C. M. de L. Norman; July 2.

The rank of Lieut. F. D. Owen is as now described, and not Sec. Lieut. as stated in *Gazette* June 20.

The notifications in *Gazettes* May 23 and June 6 concerning Lieut. J. W. Holdsworth are cancelled.

The notification in the *Gazette* March 14 concerning Lieut. H. Townsend is cancelled.

The notification in *Gazette* May 13 concerning T. W. B. Hill is cancelled.

The notification in the *Gazette* of May 16 concerning Lieut. M. R. Helliwell is cancelled.

Technical Branch

Capt. W. C. Broadhead to be Capt., Grade (A), from Grade (B), from Aug. 12, 1918, to April 1.

Capt. R. N. Spence to be Capt., Grade (B), from (Ad.); April 1, 1918.

Lieuts. to be Lieuts., Grade (A.):—L. J. Anstey, from (O.); April 1, 1918.

(substituted for notification in the *Gazette* of Oct. 4, 1918. E. G. Taylor, from (Ad.); Feb. 26.

Sec. Lieut. (actg. Lieut.) F. S. Stokes to be Lieut.; March 8 (substituted for notification in the *Gazette* of April 11).

Sec. Lieuts. to be Lieuts., without pay and allowances of that rank:—T. H. Evans; April 2, 1918. S. Empsall; Dec. 16, 1918. L. G. Sewell; May 7.

Sec. Lieut. (Hon. Lieut.) B. T. Hood to be actg. Lieut. whilst employed as Lieut., Grade (B), from Oct. 17, 1918, to April 30.

The following relinquish their comms. on ceasing to be employed:—Capt. E. Graham (Lieut.-Col., R.E.); May 9. Lieut. H. Marsden (Lieut., Manchester R.); June 6. Maj. H. C. Tweedie (Maj., N. Staffs. R.); June 20.

(Then follow the names of 39 officers who are transfd. to the Unemployed List under various dates.)

The notification in the *Gazette* of March 18 concerning Lieut. T. W. Cave, M.C., is cancelled.

Motor-Boat Branch

Capt. H. Howard is transfd. to Unemployed List; March 28.

Medical Branch

Lieut. G. A. S. Madgwick is transfd. to Unemployed List; June 17.

The initials of Lieut. G. O. Roper are as now described and not G. A., as stated in the *Gazette* of April 1.

Dental Branch

Lieut. H. H. Chapman is transfd. to Unemployed List; June 11.

Chaplains' Branch

The Rev. P. C. Barber is transfd. to Unemployed List; June 13.

Memoranda

(Then follow the names of 233 Overseas Cadets granted temporary comms. as Sec. Lieuts. and 19 Cadets granted Hon. comms. as Sec. Lieuts.)

Lieut.-Col. H. C. H. Hudson, M.V.O. (Capt. (Bt. Maj., Hussars), relinquishes his commn. on ceasing to be employed; June 17.

Temp. Hon. Lieut. C. G. Whinfrey relinquishes his commn. on ceasing to be employed; June 30.

Transferred to Unemployed List:—Maj. C. L. Baillieu, from (S.O.); March 27. Lieut. C. W. Hogg, from (S.O.); April 23. Capt. M. J. Golding, from (S.O.); May 20. Capt. J. M. Mitchell, M.B.E., from (S.O.); June 11. Capt. F. T. Bridger, from (S.O.); June 15.

London Gazette, July 4

The following temporary appointments are made:—

Staff Officers, 1st Class (Air).—Lieut.-Col. A. C. Winter, O.B.E.; July 1, vice Maj. H. A. Moore, C.B.E., M.C.

Staff Officers, 2nd Class (Air).—Maj. E. J. Hodsoll; July 1, vice Maj. W. J. C. Kennedy-Cockran-Patrick, D.S.O., M.C. (Q.).—Lieut. (Hon. Capt.) H. W. Clarke; July 1, vice Capt. Lord St. Oswald.

The Prix de la Ligue

FROM July 15 next the half-yearly French Aerial League Prize may be competed for. The prize will go to the French aviator who makes the longest flight from Paris to one of the French colonies.

British Flyers in Sweden

Two British officers, Major Rally-Johnston and Capt. Saunders, in company with a Swedish flying expert, have arrived at Stockholm, reports the *Morning Post* correspondent there. They intend to give passenger trips in double-seated war machines.

Paris-Melbourne

WE understand that in a few weeks' time Poulet, on a Caudron, may have a try for the Paris-Melbourne flight which the late Jules Vedrines had intended to attempt.

The Paris-Dakar Flight

It is reported from Casablanca, on June 29, that the French aviator Lieut. Lemaitre, who left Mogador (Morocco) on June 28 has crashed at Pont-Etienne, 1,400 kiloms. from Mogador and 700 kiloms. from Dakar. Lieut. Lemaitre and his passenger escaped, but the machine is smashed. The Paris-Dakar flight appears to be ill fated, but by his fine flight of 1,400 kiloms. over desert country Lieut. Lemaitre has proceeded farther towards Dakar (Cape Verde) than any previous attempts.

Yet Another Attempt.

It is rumoured that Lieut. Roget may attempt the Paris-Dakar flight.

Cost of Aerodrome Land

THE claim of Mr. N. Hague, of New House Ford, Arundel, Sussex, was heard before the Defence of the Realm War Losses Commission on June 26, Sir Matthew Wallace presiding, in respect of losses incurred through the occupation of land by the R.A.F.

It was stated that 95½ acres had been taken over for the purposes of the aerodrome, and the claim was for 60s. per acre with rent and tenant right losses, amounting altogether to £1,474.

Other claims of the same nature were made by Mr. C. W. Atkey and Mr. E. Ewens, of Chichester for £576 and £116, and Mr. A. Rushbrook and Messrs. E. and C. Philpott, of farms near Ramsgate, for £601 and £522, the last two being in respect of aerodromes under the Admiralty.

The Atlantic Vickers-Rolls Machine

It is possible that the Vickers Vimy-Rolls aeroplane upon which Sir J. Alcock flew the Atlantic may become the

Staff Officers, 3rd Class.—(Q.) Lieut. F. J. Cooke; July 1, vice Lieut. (Hon. Capt.) H. W. Clarke.

Staff Officers, 4th Class (T.).—Sec. Lieut. L. B. Hobgen; Nov. 6, 1918, and to be actg. Lieut. till April 30.

Area Commander.—Col. (actg. Brig.-Gen.) C. A. H. Longcroft, C.M.G., D.S.O., A.F.C.; March 8, to retain actg. rank of Brig.-Genl., and to be graded for purposes of pay and allowances of Maj.-Genl. while so employed, vice Col. (actg. Brig.-Genl.) P. W. Game, C.B., D.S.O.

Group Commander (graded for pay and allowances as Col., Staff).—Lieut.-Col. G. W. P. Dawes, D.S.O.; June 25.

Flying Branch

Lieut.-Col. (actg. Col.) R. H. Clark-Hall, D.S.O., to retain actg. rank of Col. while employed as Col. (A. and S.); June 5.

Lieut.-Col. C. Bovill to be Lieut.-Col. (A.), from (S.O.); May 23.

Capt. G. H. Bowman, D.S.O., M.C., to be actg. Maj. while employed as Maj. (A.); June 7.

Capt. T. E. Salt, A.F.C., to be graded for purposes of pay and allowances of Maj. while employed as Maj. (A.); May 1.

Capt. (actg. Lieut.-Col.) C. E. Wardle to be Capt. (A.), from (S.O.), and to relinquish actg. rank of Lieut.-Col.; March 24.

Lieut. H. O. Long to be Lieut. (O.), from (Ad.); June 10.

Sec. Lieut. H. J. Ashley to be Lieut.; April 21.

The following relinquish their comms. on ceasing to be employed:—Lieut. T. W. Morse (Capt., Cent. Ont. R.); Oct. 24, 1918. Lieut. H. Johnson (Capt., Can. Fld. Art.); Dec. 14, 1918. Sec. Lieut. (Hon. Lieut.) R. K. Armstrong (Lieut., Can. Art.), Lieut. (Hon. Capt.) R. A. Boger (Maj., R.E.); April 14. Lieut. H. C. Scotheran (Capt., West Ont. R.); April 23. Lieut. F. L. Baker (Lieut., West Ont. R.); April 25. Maj. P. C. Sheeren (Maj., New Brunswick R.); May 2. Capt. P. B. Tabernacle (Capt., E. Ont. R.); May 7. Lieut. J. W. Langmuir (Capt., Can. Local Forces); May 30. Lieut. D. A. Gordon (Lieut., Brit. Col. R.); June 3. Sec. Lieut. E. A. H. Goodwin (Sec. Lieut., R. Suss. R.); June 4. Lieut. C. A. S. Bean (Lieut., Brit. Col. R.), Sec. Lieut. (Hon. Lieut.) H. S. Stidson (Lieut., Sask. R.); June 5. Sec. Lieut. (Hon. Lieut.) F. G. Black (Lieut., Cent. Ont. R.); June 23. Lieut. J. A. Parker (Lieut., R. Scots Fus.); July 5 (substituted for notification in *Gazette*, June 13).

(Then follow the names of 123 officers who are transfd. to the Unemployed List under various dates. We regret that owing to great pressure on our space it is impossible to reprint this portion of the List.—Ed.)

Capt. A. E. Godfrey, M.C., A.F.C., relinquishes his commn. on account of ill-health, and is granted the rank of Maj.; June 25.

Capt. T. G. M. Stephens relinquishes his commn. on account of ill-health contracted on active service, and is permitted to retain his rank; June 26.

Sec. Lieut. E. H. Fry relinquishes his commn. on account of ill-health, and is permitted to retain his rank; June 24.

Sec. Lieut. W. C. Treen, M.C., D.F.C., D.C.M. (R.A.F.), relinquishes his commn. on account of ill-health, caused by wounds; June 20.

property of the nation. Messrs. Vickers, Ltd., are considering the matter. In the meantime, the machine is under repair at the Weybridge works. The souvenir hunters who annexed some parts of the machine when she got "bogged" in Ireland might have the decency under the circumstances to return their captures—even if it be anonymously, and no questions asked.

Aerial Mails in America

It is stated that the air mail service in America will be extended from Chicago to Omaha and St. Louis next autumn, shortening the time for correspondence between the Atlantic and Pacific coasts by from 12 to 24 hours.

French Aero Club and Lady Aviators

CONSIDERABLE annoyance has been caused in French aviation circles owing to the decision of the French Aero Club not to recognise feminine aviation records as such, but only in cases where they exceed those of male flyers. The general feeling in France appears to be that if a French *aviatrice* puts up a better performance than, for instance, an American one, the fact should be recognised. It is pointed out that at a time when our interests are turning towards commercial aviation, everything possible ought to be done to encourage those who are doing their best to create enthusiasm and promote the interests of the movement. And quite right too. We understand, however, that at the next aeronautical congress the question will be discussed, when it is to be hoped that recognition will be given to those of the gentle sex who, by the very fact that they pilot aeroplanes, are doing good work in demonstrating the possibilities of flying.

A New Magnesium Alloy

A METAL lighter than any yet known, and as strong as or stronger than steel, has for years been the dream of many, and every now and then rumours are circulated to the effect that at last it has been discovered. The advantages which such a metal would have, especially for aircraft, are obvious, but unfortunately it is generally found on investigation that there is a "snag" somewhere. The latest report to be circulated relates to a new magnesium alloy, said to have been discovered by the Shawinigan Electro-Metals Co., of Montreal. The new alloy, it is stated, is only two-thirds the weight of aluminium and is "as strong as steel." It is said to be especially suitable for pistons and connecting-rods of aero and motor car engines. It is to be hoped that some of the qualities attributed to the new alloy may, on closer examination, be found to be correct. Further particulars will be awaited with interest.

SIDE-WINDS

THE name of Major H. Waymouth Prance, M.I.A.E., A.F.R.Ac.S., A.I.E.E., will be familiar to the majority of our pre-War readers as a partner in the well-known firm of Markham and Prance, consulting engineers (motor, marine and aeronautical), of Dudley House, Southampton Street, Strand, and High Street, Southampton. Like many other businesses of this nature, this firm shut down upon the outbreak of war, the partners and staff betaking themselves to the business of assisting in defeating the Hun and his allies.

MAJOR PRANCE'S duties carried him to the land of the Turk, where he took part in the Gallipoli campaign as second in command of the 2/3rd Battalion London Regiment (Royal Fusiliers). Subsequently, after a somewhat protracted retirement to hospital, Major Prance, being no longer fit for active service, returned to his old sphere, that of petrol engines and aeroplanes, and for the past three years he has been serving in the technical department of the R.F.C. and R.A.F.

HERE his duties were of a varied nature. In the early days he supervised tests and prepared reports upon the experimental engines which were submitted to the department. He next took charge of the Technical Information Section, which was subsequently developed into the Technical Publications Section. This section was responsible for the compilation of engine, aeroplane and seaplane handbooks, data charts and diagrams, for the supply of technical information to the Allies and Colonial Governments, the supply of technical information to engine and aeroplane contractors, and the preparation of reports on German engines and aeroplanes.

His activities in this direction having ceased, we have pleasure in welcoming Major Prance back to civil life. His future plans are as yet unsettled, but with his very thorough knowledge of internal-combustion engines and up-to-date aeronautical practice, his services should be of great use in civil aviation.

MAJOR PRANCE is one of the "old hands" in aeronautical circles, whose experience dates back to the days of many years before the War, and this early knowledge combined with his War-time experience of aeronautics should prove a very useful combination. We may add that we should be very pleased to put any firm in touch with Major Prance should they wish to correspond with him.

A LITTLE publication which is of very great use to all who have to do with publicity is the official handbook of the British Society of Trade and Technical Journals. This gives practical information regarding the leading technical journals of this country, together with their advertisement tariffs, etc., and a copy should be in the hands of all who have to do with the placing of announcements in such papers. Enquiries should be addressed to the Secretary of the Association, at Sicilian House, Southampton Row, W.C. 2. The book is published at 1s.

THE "Skootamota"—the A.B.C. motor scooter—is rapidly winning its way in popular favour, and Messrs. Gilbert Campling, Ltd., 1, Albemarle Street, W. 1, have been almost swamped with enquiries and orders. They have got out a smart little folder which tells you all you want to know about this handy and speedy little mount, and they will be pleased to send a copy to any FLIGHT readers. It may be recalled that this scooter—which is priced at present at £40—weighs only 65 lbs., is provided with a seat and has a speed range up to 20 m.p.h.

THOSE who have read the story of the Transatlantic flight of Capt. Sir J. Alcock and Lieut. Sir A. W. Brown, will have realised the important part their clothing played in enabling them to keep up their strength, and it is interesting to learn that Burberry protection, which enabled the first man to reach the South Pole, was relied upon to carry them through. Both Capt. Alcock and Lieut. Brown were clothed in Burberry flying suits, which required no electrical heating, and which these gallant gentlemen credit with giving them the greatest comfort possible under the trying circumstances of the flight. Practically all those who have entered for the contest have shown the acumen to choose Burberry material and design, as their protective covering against the rigours of the long overseas flight.

A CHARMING brochure is to hand containing letters from Messrs. Sir W. G. Armstrong-Whitworth and Co., Ltd., and

the Siddeley-Deasy Motor Car Co., Ltd., regarding their alliance, and the announcement of the new Armstrong-Siddeley six-cylindrical car. The booklet also gives some details with regard to the future policy and developments of the company, and doubtless any of our readers who are interested in a high-class car such as the Armstrong-Siddeley will be glad to have these particulars. A copy can be obtained on application to the Siddeley-Deasy Motor Car Co., Ltd., Coventry.

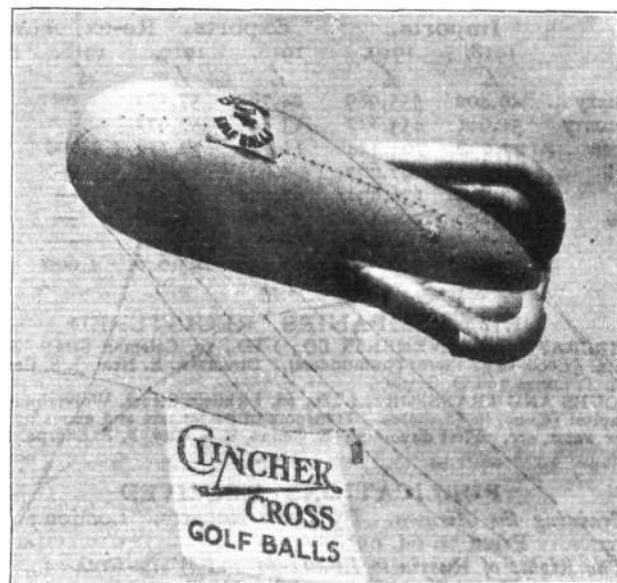
MESSRS. S. SMITH AND SONS (M.A.), LTD., of 179-185, Great Portland Street, have acquired the sole selling rights for the whole world for the famous "K.L.G." plug.

WITH characteristic enterprise Messrs. C. C. Wakefield and Co., Ltd., announced in Saturday's morning papers, side by side with the news that the "R. 34" had crossed the Atlantic, the fact that her Sunbeam motors were being lubricated with Castrol R. Nothing like being up to date! Mr. Thorburn says he would like to see their address changed to Wide-Awakefield House.

MR. F. G. DIFFIN, President of United Aircraft Engineering Corporation, 52, Vanderbilt Avenue, New York, arrived this week on the *Baltic* in London, and his address during his stay will be the Savoy Hotel. Mr. Diffin is over here for the purpose of establishing a London Branch of his Corporation, besides taking up various matters pertaining to commercial aviation with London manufacturers.

SOUTHEND was the venue selected by the Alex. Mosses Radiator Co., Ltd., of Long Acre, for the Victory Dinner and outing to their employes on Friday last. The party, numbering some 50 strong, journeyed down in motor char-a-bancs and cars, arriving about midday in time to do justice to an excellent repast at the Royal Hotel. Mr. Alex. Mosses himself presided, and was supported by Mr. H. L. Scales, the works manager. At the special invitation of all Mr. W. D. Rae, of the Sheet-Metal Workers Society, accompanied the party.

The speeches were short, as everybody was bent upon enjoying the glorious day to its utmost in out-door amusement. The outing was the first of its kind since the formation of the company, some two years since, as they have been far too busy upon production of radiators for various types of aircraft, thereby keeping up the excellent standard of being third or fourth regularly on the production (output) chart. This outing was therefore a well-deserved relief after such a continued and concentrated War effort.



"Sausage balloons"—old and new—can still make good in Peace time, as the above demonstration of utility emphasises. This shows one of these "observers" being used by the North British Rubber Co., the makers of every description of rubber goods, including these tameable balloons, for advertising "Clincher Cross" golf balls at the Braid Hills, Edinburgh, on the occasion of a golfing tournament.

RESETTLEMENT

THERE are many officers and men of the R.A.F. who are demobilised or are about to be demobilised.

In order to assist those who are undecided or are seeking advice as to their prospects in civil life, the Editor has arranged for an expert, with wide experience of service, industrial and educational conditions, to give advice to those who may solicit it through the medium of this Journal.

Applications, which must be in writing, should be marked *Resettlement*, and addressed to the Editor, FLIGHT, 36, Great Queen Street, Kingsway, W.C. 2. They will be dealt with in these columns, as far as possible, in rotation.

K.G.V., LIEUT. R.A.F.—The R.Ae.C. certificate was usually obtained during the period when graduating for "wings." If you have not yet obtained this certificate, you should communicate with the Secretary, Royal Aero Club, 3, Clifford Street, London, W. As you are an R.A.F. pilot, and have been passed by the Medical Board "fit to fly passenger and goods aircraft," you can obtain a licence to fly civilian aircraft (see Air Navigation Regulations).

P.H.G., Ex-R.N.A.S.—In view of the large number of experienced pilots at present available for civilian aviation, and having regard to the few that will be required in the immediate future, we fear that you will experience great difficulty in obtaining employment as a civilian pilot. We can only suggest that you resume the occupation for which you have been trained or make application for a course of aeronautical engineering at a recognised college or university.

J.B., Ex-R.A.F.—For financial aid to enable one to resume studies which have been interrupted by War service, application should be made to the Appointments Department, Ministry of Labour.

T.H.P.—If you are already demobilised you should address your query with regard to the honorary commission to the Secretary, Air Ministry, Strand. Give full particulars, with dates, of your service, when appointed a cadet and what training you received. Messrs. Cox and Co., Charing Cross, can furnish you with full particulars in connection with any kit allowance to which you may be entitled. If you are not demobilised, your demobilising officer should be able to give you the information you seek.

IMPORTS AND EXPORTS, 1918-1919.

AEROPLANES, airships, balloons and parts thereof (not shown separately before 1910). For 1910 and 1911 figures see "FLIGHT" for January 25, 1912; for 1912 and 1913, see "FLIGHT" for January 17, 1914; for 1914, see "FLIGHT" for January 15, 1915; for 1915, see "FLIGHT" for January 13, 1916; for 1916, see "FLIGHT" for January 11, 1917; for 1917, see "FLIGHT" for January 24, 1918; and for 1918, see "FLIGHT" for January 16, 1919.

	Imports.		Exports.		Re-exportation.	
	1918.	1919.	1918.	1919.	1918.	1919.
January ...	£ 49,402	£ 555,989	£ 24,765	£ 57,571	—	—
February ...	51,941	453,822	13,545	57,972	—	—
March ...	47,930	704,424	11,451	72,716	1,000	400
April ...	33,342	97,662	10,815	25,433	—	—
May ...	942,866	136,631	67,224	38,428	—	—
June ...	864,296	1,410	35,658	41,526	—	—
	1,989,777	1,949,938	163,458	293,646	1,000	400

NEW COMPANIES REGISTERED

AIRCRAFT IMPROVEMENTS CO., LTD., 10, Coleman Street, E.C.—Capital £1,000, in £1 shares (50 founders). Directors: E. Neal, J. S. Cotman, F. M. T. Lange and D. Gordan.

TOURS AND TRANSPORT, LTD., 66, Lichfield Street, Wolverhampton.—Capital £6,000, in £1 shares. Transport of passengers and goods by land, air or water, etc. First directors: E. Genna, S. S. Guy, F. F. Sharpe.

PUBLICATIONS RECEIVED

Training the Airmen. By Cecil Roberts. London: John Murray. Price 3s. 6d. net.

The Rights of Russia to Lithuania and White-Ruthenia. By Stanislaw Kutrzeba. Paris: M. Flinikowski, 216, Boul. Raspail.

Bolshevism and Poland. By W. Lutoslawski. Paris: M. Flinikowski, 216, Boul. Raspail.

Our Part in the Great War. Ruston and Hornsby, Ltd., engineers, Lincoln.

On Paintings of Aircraft. The Brook Street Art Gallery, Ltd., 14, Brook Street, New Bond Street, W. 1.

The Year-Book of Wireless Telegraphy and Telephony, 1919. London: The Wireless Press, Ltd., Marconi House, Strand, W.C. 2.

Aeronautical Specifications Published

Abbreviations:—cyl.=cylinder; I.C.=internal combustion; m.=metre.

APPLIED FOR IN 1917

The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

Published July 3, 1919

- 6,153. F. W. LANCHESTER. Mechanism for receiving and launching aeroplanes at sea. (127,620.)
- 6,227. LANG PROPELLER, LTD., and G. MILLS. Aerial propellers. (127,627)
- 6,266. WOLSELEY MOTORS, LTD., and A. A. REMINGTON. I.C. aircraft engines. (127,628.)
- 6,427 and 6,472. AERONAUTICAL INSTRUMENT CO. and G. BREWER. Ripping panels for balloons, etc. (127,633 and 127,637.)
- 6,677. Sir A. T. DAWSON and Sir G. T. BUCKHAM. Aircraft gun mountings. (127,648.)
- 7,124. W. G. TARRANT. Girders, beams, struts, etc., for aircraft. (127,665.)
- 7,216. SOC. DITE "SPAD" and SOC. ANON. POUR L'AVIATION ET SES DERIVES. Control of aerial machines. (127,667.)
- 7,268. L. BLERIOT. Joints for aerial machines. (127,671.)
- 7,367. SOPWITH AVIATION CO. and H. E. CATO. Tool for extracting fixing bolts of propellers. (127,673.)

Published July 10, 1919

- 7,597. C. J. ROBINSON. Propeller shaping machines. (127,841.)
- 7,630. R. E. L. LOTT. Fuel tank mountings. (127,842.)
- 7,643. W. G. TARRANT. Joints of girders, struts, etc. (127,844.)
- 7,677. SOPWITH AVIATION CO. and H. G. HAWKER. Engine cowls. (127,847.)
- 7,952. G. H. THOMAS and G. DE HAVILLAND. Aeroplane radiator. (127,857.)
- 7,982. SOPWITH AVIATION CO. and F. SIGRIST. Struts, spars, etc. (127,858.)
- 8,055. S. A. FLOWER. Airships. (127,862.)
- 8,114. F. SAGE AND CO. and W. R. TURNBULL. Hydro-aeroplane floats. (127,866.)
- 8,199 and 8,200. P. BROTHERHOOD, LTD., C. W. BRYANT and G. F. JONES. Aero engines. (127,867 and 127,868.)

APPLIED FOR IN 1918

The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

Published July 3, 1919

- 3,677. N. WOYEVODSKY. Aircraft. (127,684.)
- 7,493. PATENT CORPORATION and W. P. THOMPSON. Flying-machines. (127,695.)
- 8,973. T. H. ROBINS and G. H. THOMPSON. Device for indicating angular position of aircraft with respect to horizontal. (127,703.)
- 9,033. D. J. MOONEY. Method of building aeroplane wings. (127,710.)
- 9,034. D. J. MOONEY, E. E. BROWN and A. C. WESCOMBE. Aeroplane wings having metal frames. (127,711.)
- 10,017. RUDGE-WHITWORTH, LTD., J. V. PUGH, V. A. HOLROYD and W. H. NELSON. Aircraft fairings or stream linings. (127,743.)
- 10,226. E. HOBBS. Sights for bomb-dropping. (127,748.)
- 13,604. D. E. W. JONES. Apparatus for cleaning weather screens, planes or wings of aircraft, etc. (127,768.)

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